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ABSTRACT

This study presents a formative evaluation of the curriculum development process in republics, states and kingdoms of the Arab world. It contains an overview of curriculum changes that have occured in Arabian educational systems over the past two decades, the effects of these changes, and the attitudes toward the future of educators who have been involved in the changes. Educators in Egypt, Iraq, Kuwait, Qatar, and Tunisia responded to questionnaires and interviews. This research is divided into three parts: (1) tabulation and interpretation of the questionnaire, using inspection rather than statistical methods of analysis; (2) presentation of case studies for each individual country; and (3) a summary chapter, synthesizing the data from all sources and stating tentative conclusions and recommendations. (JD)

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August 1978 Taher A. Razik and Verna J. Willis

TABLE OF CONTENTS

Page

Acknowledgements..*i*

List of Tables and Figures...............................*iv*

Preface..*vi*

Chapter 1
    Dimensions of the Study..............................1

Chapter 2
    The Survey...9

Chapter 3
    The Case of Egypt....................................66

Chapter 4
    The Case of Iraq.....................................113

Chapter 5
    The Case of Kuwait...................................153

Chapter 6
    The Case of Qatar....................................193

Chapter 7
    The Case of Saudi Arabia.............................228

Chapter 8
    The Case of Tunisia..................................268

Chapter 9
    Implications of the Study for Future Developments....313

References...342

Appendices...345

LIST OF TABLES AND FIGURES

Table		Page
1	Total Public and Current Expenditure and Capital Expenditure (in thousands); Percentage of GNP; and % of all Public Expenditure: Egypt	70
2	Estimated Public Expenditure on Education in Egypt (in thousands) and Percentages by Level	71
3	Number of Pupils and Teaching Staff on the Three Levels of Education in Egypt	73
4	Distribution of Classroom Hours by Subject and Grade, Nasr City Integrated Experimental School	94
5	Percentages of Time Spent in Each Major Subject Grouping by Grade, Nasr City Integrated School	96
6	Comparison of Scheduled Hours and Types of Examinations, Regular and Experimental Schools, Final Year	98
7	Timetable for the Development of New Examination Systems in Egypt	106
8	Total Public and Current Expenditure and Capital Expenditure (in thousands); Percentage of GNP; and % of all Public Expenditure: Iraq	115
9	Estimated Public Expenditure on Education in Iraq (in thousands) and Percentages by Level	116
10	Number of Pupils and Teaching Staff on the Three Levels of Education in Iraq	117
11	Statistics on TV Programs Presented in 1975-76, Iraq	144
12	Distribution of Evening Scheduling, Educational TV in Iraq	145
13	Weekly Schedule of TV Classes By Subject	146
14	Total Public and Current Expenditure and Capital Expenditure (in thousands); Percentage of GNP; and % of all Public Expenditure: Kuwait	162
15	Estimated Public Expenditure on Education in Kuwait (in thousands) and Percentages by Level	162
16	Number of Pupils and Teaching Staff on the Three Levels of Education in Kuwait	163
17	Sample Distribution of Courses Over Eight Semesters	183
18	Total Public and Current Expenditure and Capital Expenditure (in thousands); Percentage of GNP; and % of All Public Expenditure: Qatar	196
19	Estimated Public Expenditure on Education in Qatar (in thousands) and Percentages by Level	198
20	Number of Pupils and Teaching Staff on the Three Levels of Education in Qatar	199
21	Total Public and Current Expenditure and Capital Expenditure (in thousands); Percentage of GNP; and Percent of All Public Expenditure: Saudi Arabia	231
22	Number of Pupils and Teaching Staff on the Three Levels of Education in Saudi Arabia	232
23	Distribution of Hours, First and Second Level Classes for Women's Literacy Training, Saudi Arabia	262

Table | Page

24 Estimated Public Expenditure on Education in Tunisia (in thousands) and Percentages by Level....270
25 Total Public and Current Expenditure and Capital Expenditure and Capital Expenditure (in thousands); Percentage of GNP: and Percent of All Public Expenditure: Tunisia....271
26 Number of Pupils and Teaching Staff on the Three Levels of Education in Tunisia....273
27 Changing Enrollments in Tunisian Secondary Schools from 1972-73 to 1976-77....296
28 Instructional Hours Per Week and Languages of Instruction, Tunisian Elementary Schools....298
29 Weekly Schedule of Elementary School Students By Grades and Subject Areas....299

Figure | Page

1 Forms of Governance for the Educational System in Egypt....75
2 Stages of Education in Iraq....119
3 Curriculum Development Units in the Ministry of Education, Iraq....122
4 Functional Curriculum Development Structures, Kuwait Ministry of Education....165
5 Current Organization of Educational Cycles in Kuwait....177
6 General Structure of Education in Qatar....201
7 Organization of Ministry Units for Curriculum Development in Qatar....207
8 Ministry Units Responsible for Curriculum Development in Saudi Arabia....236
9 Organization of the Saudi Arabian School System....252
10 Projections for Increases in Girls' General High School and Teacher Training Institutes (1975-1980) Saudi Arabia....256
11 Projections for Increases in Girls' Elementary and Junior High School Education (1975-80) Saudi Arabia....258
12 Comparison of Growth Predictions for Literacy Training, Women and Men (1975-80) Saudi Arabia....264
13 Organizational Structures for the Educational System in Tunisia....274
14 Educational Ladders in Tunisia....303

PREFACE

The urgency of the task of creating new educational institutions and services and/or revitalizing those that already exist has become a matter of mounting concern in every nation on earth. In many industrialized countries, student achievement scores are on a marked down-hill slide and student absenteeism rates are staggering. The general public -- including the educators, parents, and even the students themselves -- is convinced that education no longer means what it used to mean, nor confers the advantages that it used to confer.

The Third World nations have other educational dilemmas, but with many of the same effects. Deeply ingrained cultural traditions which resist the dramatic race toward modernization, whether that modernization comes from Western or Eastern industrial sources, have trapped developing nations in a science-fiction sort of time warp. Splendid, or in some instances, merely comfortable and familiar, pasts are in full-scale confrontation with unforeseeable and possible awesome futures, and no one seems quite certain what can or should be salvaged from history to enrich the present and to prepare Third World peoples for life in the 21st Century.

There is no confusion about the need to eradicate illiteracy, for every nation is now aware that popular ignorance is an insufferable detriment to any society. And despite the fear and distrust of modern technology, more evident in some nations than in others, there is grudging acceptance of the fact that it is here to stay and that it must be understood if it is to be controlled for human benefit.

The pressures on educational systems in developing nations are therefore three-fold: (1) the pressure to abate the effects of vast differentials in intellectual development, career preparation, and problem-solving capabilities that exist among and within nations, (2) the pressure to preserve cultural integrity and to reserve the rights of nations to take separate and individual actions, and (3) the pressure to balance social and technological developments with humanistic and scientific enterprises in the pursuit of personal, national, and international welfare.

The countries of the Third World are conscious of the fact that existing models of education imported from modern industrial nations do not perfectly meet the needs either of their own people or of the people for whom they were created. They are aware that these models have inherent biases which may even be to some extent detrimental to developing nations. Nevertheless, the need for rapid progress in schooling is so great that adoption and adaptation of these models is viewed not only as acceptable, but also as imperative. In their encounter with the new age through modern communications; tourism; the impact of multinational corporations; and international educational, cultural, economic and scientific organizations, statesmen and educators of developing nations see the necessity to change their authoritarian systems of schooling and their preferential education of the elite. But perceiving the necessity for change and developing the mechanisms to accomplish it are not automatically synchronous. Unfortunately, planners in every country have the tendency to concentrate on *products* of change, rather than on the mechanisms, strategies and *processes* which work to facilitate or retard the desired outcomes of planning.

This study has aimed at an assessment of the nature of curriculum development processes in republics, states and kingdoms of the Arab world. As in an earlier study (Comparative Analysis of Infrastructure in Curriculum Systems and Strategies: The Case of Developed Countries, Razik, 1977), it has been considered especially important to contrast the formal documents and pronouncements concerning curriculum development activity with the informally stated perceptions of the people who are intimately engaged in these activities. It is assumed that there are always discrepancies between what is ideally meant to happen and what actually occurs. These discrepancies are instructive; they can highlight what processes tend to go well and what do not, and they can provide clues as to what adjustments can be made in these processes to make them at once more humane and more effective.

While nations of the West are discovering that freedom of choice in education sometimes leads to the irresponsible "choice" of being absent from school and delinquent in learning tasks, Arab countries are struggling with the realization that authoritarian control is not necessarily a successful motivator of students and that school regimentation in fact retards the development of social responsibility and psychological maturity. Thus it is apparent that dogmas of either extreme do not have the capability of resolving the problems of modern education.

Somehow, the curriculum planners and educational technologists of industrial and developing nations must meet the challenge of the new era with imagination and constant willingness to explore new avenues of theory and research. They are beginning to understand that students themselves often have the best insights as to what must be changed, and how. But students supply only one perspective, and what is needed are the perspectives of all segments of the society or societies served by the school systems. Even the least educated parents, when conscientiously asked by Arab leaders,can contribute valuable ideas about schooling if they feel it is important and sensible to do so.

It would appear, however, that grass roots participation is not itself sufficient to guide the curriculum development process. There is great need, in the Arab countries surveyed in this study, for well-trained and interdependently organized curriculum development specialists at national, regional and local levels of the educational systems. Attention is turning now toward the creation of a mutually investigative, mutually supportive, cooperative network of curriculum designers, researchers, implementers, and evaluators at the pan-Arab level. While there are unique circumstances which make curriculum change theory and practice different from country to country, it is recognized that commonalities are somewhat more prevalent and that Arab nations can benefit most, educationally, by sharing information, resources, and services with each other.

Sharing ideas strengthens the conceptual and skill competencies of all the sharers. Multi-directional sharing of information is presented here as one of the most critical and most often neglected aspects of the curriculum development process. It qualifies all the results of planning, and determines to a very large extent whether educational resources are well or poorly used.

From the perspective of communication in education, it becomes important also to ask the question whether selective withholding of information, such as often occurs in authoritarian educational structures, does not itself significantly impede the intellectual and social development of a nation's children. What information is sought from the students themselves and how it is used is an issue of great importance

Chapter 1

DIMENSIONS OF THE STUDY

The pattern of this comparative analysis of curriculum development processes in Arab nations follows logically from that of a similar study conducted in 1977 (Razik, T.A. Comparative Analysis of Infrastructure in Curriculum Systems and Strategies : The Case of Developed Countries). This earlier study identified common and dissimilar elements of curriculum change in 13 different European countries and the United States and Canada, with extended case studies presented on Swedish, British, and U.S. systems.

Though the focus in the present work has shifted to the Middle East and the Arab-Islam civilization, the investigation of change mechanisms and processes has remained the central motif. There is admittedly less radical diversity in the Arab cases which constitute this new study. This is partly because of the strongly centralized nature of curriculum development in all of the nations surveyed (as opposed to the range of centralized-decentralized activities in the Western nations) but also because of the common cultural and religious traditions which are reiterated from case to case. Nevertheless, each nation seems to have its own particular educational priorities, each of which presents slightly different problems and requires a slightly different analysis and approach.

A primary goal of the present research is to provide an overview of the curriculum changes that have occurred in Arabian educational systems over the past two decades, what the effects have been, and how the educators who have been involved in the changes view the future. Though the interpretation of data from the questionnaires, interviews, in every school system , though this fact is not often clearly understood.

The use of formative techniques for evaluation of students, now coming to the fore in some Arab countries, is one attempt to come to grips with the new image of the student as active partner with the teacher in his own learning activities. It provides a means for gathering data about the student at frequent intervals and for discussing this data with him. It also provides valuable information about needs for curriculum revision or for curriculum adjustment to meet individual needs.

Formative evaluation of the curriculum development process itself is also a new concept in most developing nations, and for the most part, curriculum specialists have not been trained to analyze and adjust continuously the critical events in their own curriculum change processes. This study is, in effect, such an analysis. It is an attempt to compare curriculum contexts and events in the Arab world and to indicate particular directions which future events may take. Above all, it is intended to serve as a resource book to the people who are charged with changing the educational systems and vitalizing the learning experiences of millions of Arabs, young and old. Some of the historical and analytical perspectives, model designs, and process descriptions may be useful to other developing nations as well.

and printed materials has adhered strictly to the information provided by the respondents, in the interests of accuracy, it is also true that the writers' systems perspectives and interest in international educational issues have influenced the further conceptual development of the study. It is, in fact, from the study of Arab educational systems generally, together with their common operating principles and their occasional uniqueness, that essential elements of the curriculum change process can be revealed.

This research is divided in three parts: tabulation and interpretation of the questionnaire, using inspection rather than statistical methods of analysis; presentation of case studies in alphabetical order; and finally, provision of a summary chapter which is devoted to the synthesis of data from all sources and to the statement of tentative conclusions and recommendations. The countries selected for in-depth case studies are Egypt, Iraq, Kuwait, Qatar, Saudi Arabia, and Tunisia. They represent diverse geographical, economic, and political situations, as well as diverse curriculum development projects and emphases.

The final part of the study refers to many of the same themes and implications for future curriculum development practices that characterized the last section of the earlier study, cited on page 1. However, the last chapter of this work on Arab curriculum change activities also stands on its own, as pertinent and exclusive to this research design. No regional or cultural entity can be understood except on its own terms.

The Survey

The questionnaire utilized in the first part of the study preserved some of the categories and even some of the questions of the 1977 study, since they had already proven their effectiveness as discriminators and sources of critical information. The new survey was, however, much less concerned with historical influences on curriculum development and much more dominantly keyed to the "here and now" aspects of curriculum change planning implementation, and follow-up.

The ten categories of questions, as reviewed from the previous study, are as follows:

I. Administrative Infrastructure of the Curriculum Development Machinery. This category asked for specification of Ministry and other units involved, description of interrelationships of these units, composition of each unit, nature of information networks, types of technical assistance utilized, adequacy of existing building facilities, and availability of special budget for curriculum development activities.

II. Factors Influencing Change in Curriculum. A brief check list of social influences offered alternatives to respondents regarding curriculum change incentives.

III. Initiation of Curriculum Change and Development. Identification of initiator units, descriptions of the initiation process, and assessments of critical problems were the types of responses sought by this question.

IV. Planning for Curriculum Change. This question asked for specification of frequency of reform, types of planning processes involved, types of personnel and organizations utilized, and use or non-use of financial estimation strategies.

V. Design and Revision. Interrelationships between various educational planning activities were investigated here. Respondents were asked whether curriculum changes are preceded by careful statements of strategy and rationale, and at what level of specificity objectives are written. Other questions in this category dealt with necessary preconditions and design support activities, including preparation of texts and other media.

VI. Experimentation. This question was designed to discover whether new curriculum is experimentally implemented before installation in all schools, and if so, how the results of such trials are subsequently utilized.

VII. Implementation and Dissemination. In this category, respondents were queried concerning steps taken to implement new curriculum and to what extent the implementation phase involved cooperative efforts with other countries.

VIII. Evaluation. A series of questions in this subdivision sought to discover the nature of evaluation processes and whether present curriculum evaluation systems are considered adequate. These included questions on follow-up and feed-back procedures.

IX. Major Issues in the Process of Curriculum Development. This category was subdivided into three sections: (a) the role of research, (b) participation, and (c) decision-making. The objective of the first was to learn how much research is done, by whom; what areas of concern are considered most in need of research; and what obstacles stand in the way of improving curriculum development research. The second section asked respondents to rank order the types of individuals or groups which might be involved in curriculum development, according to their importance in the process. The final group of questions in this category sought to determine who makes curriculum decisions, and at what levels of the educational systems these decision-makers are working.

Personnel issues were also included here.

X. Financing. Budgetary allocations and other financial decision-making issues constituted the last group of questions.

A total of 18 responses to the questionnaire were received and tabulated. Though this is obviously a small subject sample, it is highly representative in terms of nations polled. The curriculum development processes of twelve separate Ministries and national school systems are thus detailed, and in four countries, responses have been made by more than one observer.

Adding to the survey results the data collected in face-to-face interviews, consistent patterns are discernible which lend validity to conclusions which are drawn. Since the design of the survey follows, in general, the method of comparative systems analysis on the conceptual level only, no items were constructed to yield statistical significance and no statistical inferences are made. Hypotheses tested are of the informal kind. It was expected, for example, that most Arab nations would be lacking in thoroughly trained curriculum research and development personnel, and this, in fact, is attested to by all respondents. Another predicted result is that, because of long traditions of central authoritarianism, most of the countries surveyed would not have advanced very far in the direction of participatory school planning, and this is in fact the case. A third hypothesis was that curriculum development work would still be highly concentrated in subject-matter committees and that full-scale coordination among these committees would be the exception rather than the rule. It was not anticipated that there would be much evidence of sophisticated change processes, with innovations at psychological and social levels of human awareness as well as at rational decision-making levels.

On the other hand, Arab educators were expected to be deeply concerned about the current state of education in the Middle East, not only because of the increasing need to produce skilled manpower but also because existing curricula for learners of all ages is known to be insufficiently related to the everyday lives of the people and inadequately keyed to social and technological developments which have impinged on Arab societies during the last half-century. Respondents were expected to indicate considerable openness to new ideas, as well as willingness to rely temporarily on large numbers of outside experts and educators.

The survey has been particularly utilized to assess the respondents' perceptions of what areas of curriculum design, implementation and evaluation are consistently most troublesome. If particular difficulties can be identified as relatively common among all nations surveyed, there will be a clear indication that interventions at those points of difficulty should occur and that these interventions might take the form of cooperative problem-analysis, resource mobilization, and problem-solving.

In the item-by-item analysis of the responses to the survey instrument which will be undertaken in Chapter II, it will be apparent that conceptual redundancy and overlap is characteristic of the questioning. There are difficult communication issues at stake, as well as difficult concepts of curriculum change theory and practice which are to be addressed. Major research questions have therefore been restated in several different ways and approached from several different perspectives. This circularity or redundancy in the data collection process serves to highlight the purposes of the study for the respondents, as well as to supply the researchers with data which increases in comprehensiveness over the ten categories of questions. Many questions are open-ended, inviting the expression of individual opinions and judgments.

All responses are anonymously reported, and have been treated as a whole body of information rather than as country-by-country reporting. However, in cases where there are unique or considerably different responses submitted from one nation or another, these are duly noted and interpretations are made of the anomalies.

The In-Depth Interviews

In each of the six countries selected for participation in detailed case studies, a person or persons were identified by Ministry of Education officials as having primary or extensive responsibility for curriculum renewal. These persons, or appointed representatives, were contacted and interviewed in reference to the issues treated in the questionnaire. The focus of each interview was the "machinery" or process of curriculum change as viewed by the curriculum development specialist. Supplemental materials were supplied to the interviewer in the form of reports, brochures, statistical summaries, and curriculum outlines and teachers' manuals. Data generated in the interviews has not been separated from data translated from the printed materials, since they are complementary sources and often overlapping in content.

Summary

Several previous studies have been conducted which have sought to analyze systems and subsystems which have been created for curriculum development and to analyze the processes characteristic of these. Most of these studies are related to curriculum change mechanisms in developed countries, however, and are not always keyed to the issues which concern developing nations.

In 1974, a survey was conducted by personnel of the UNESCO Regional Office in Beirut, entitled Mechanisms for Planning and Administration of Curriculum Development in the Arab World. Summary comments indicated at that time that there were serious discrepancies between what curriculum development officials intend and what is actually being accomplished in Arab education. A major purpose of the present study is to update the findings of the four-year old study and to ascertain whether the gaps between theory and practice, intentions and accomplishments are beginning to close and whether there has been significant change in the processes by which curriculum is renewed in the Arab world over the past few years.

It is hypothesized that there may be several critical variables which are not being taken fully into account, and that the present survey will help to pinpoint these variables and suggest possible avenues of further research and development. Since curriculum change processes are legitimately viewed as never "finished" or complete in any static sense, it seems important over and over to remind decision-makers in educational circles throughout the world that, regardless of progress to date, there is continuous work to be done in reconceptualizing what the process of education is all about and what structures and processes are most conducive to the achievement of educational goals. Though the nations under study here are members of the Arab world, there are surely insights to be derived from their experience which will be helpful to other countries in similar states of change.

Chapter 2

THE SURVEY

The returned questionnaires which furnish data directly from Arab curriculum developers for this study number 18 in all. Four of these are from Kuwait. Qatar, Saudi Arabia, and Tunisia each returned two sets of responses. In the cases of Egypt, Jordan, Syria, Lebanon, Iraq, Oman, Sudan, and the United Arab Emirates, a single response from each has been obtained.

The data has been generated from three types of questions: those which required checking appropriate options or which required rank ordering of items; those which required short, fill-in answers; and those which allowed for longer and more comprehensive responses.

In the case of check-list items, percentages of responses favoring particular options are used to indicate degrees of agreement or disagreement among the respondents. Other responses are inspected and treated by comparative analysis. Each question is discussed separately, in order of its appearance in the questionnaire. Individual respondents are not identified and responses are not separated by national origins except in instances where knowledge of origin adds significantly to the interpretation.

The aim of the analysis is to discover trends and to consider the obstacles to future curriculum development as these are cited by the respondents themselves. Discussion of each of the ten categories is preceded by a brief statement of the rationale for each question, in order to clarify the problems or issues addressed and the bases for interpretation of the returned data.

If one-third or fewer (5.6 to 33.3 percent) of the respondents are in agreement on an item or an entire question, this is considered *low* agreement. If percentages fall in the interval between one-third and two-thirds (38.9 to 66.7 percent), the agreement among respondents is considered *moderate*. Percentages from 72.2 to 100 mean that more than two-thirds of the respondents have given the same response, indicating *high* agreement.

Category I: Administrative Infrastructure of the Curriculum Development Machinery for Each Educational System

There are seven parts in this category, all designed to investigate the nature of curriculum development units and subunits in the separate ministries of education. Since the emphasis throughout this study is on process, the questions ask the respondents to specify functional areas of responsibility and functional interrelationships, rather than to describe units by name and position in the organizational hierarchies. The request for specification of numbers and qualifications of personnel also exhibits the functional theme; there is a need to know whether curriculum development units are adequately staffed, with adequately trained people. Assessing the availability of information, technical assistance, and physical and financial resources again places the spotlight on functional organization and effective linkage systems.

Question I - A, items 1 through 8.

In each country, curriculum development units or divisions may have several subunits. Please indicate with a check (✓) the kinds of subunits listed below which you have in your Ministry of Education.

1. *Specialized curriculum development units on the following levels:*

[ ] a. *elementary education*
[ ] b. *junior high school*
[ ] c. *senior high school*

2. *An experimental unit for initiating try-outs of newly designed curriculum:*
    [ ] a. *on a limited level*
    [ ] b. *on a regional level*
    [ ] c. *on a national level*

3. *A unit specialized in educational research and development (R & D):*
    [ ]

4. *A unit responsible for evaluating existing curriculum and suggesting or recommending changes or furthur development:*
    [ ]

5. *A control or supervisory unit for monitoring the progress of proposed curriculum revisions:*
    [ ]

6. *A publications unit which attends to the preparation of manuals, textbooks, etc.:*
    [ ]

7. *An audio-visual or instructional media unit which is solely designed to assist in the curriculum development process:*
    [ ]

8. *A unit responsible for training teachers to use the newly developed curriculum:*
    [ ]

Responses to Question I - A, items 1 through 8

1. All nations reported having curriculum development units which are specialized in elementary, junior high school and senior high school education, although Oman stated that one unit serves for

all three levels.

2. 44.4 percent of the respondents said that their countries have no experimental unit at the national level which initiates try-outs of newly designed curriculum. 11.1 percent indicated that no experimental units exist anywhere in the nation. 38.9 percent reported that there are no such units at the limited (local or experimental school) level, and an overwhelming majority (83.3 percent) said that nothing of this sort is available to guide field trials at the regional level. Only Lebanon, Tunisia, and the United Arab Emirates reported having regional units.

3. Seven respondents (38.9 percent) said that their nations had no research and development (R & D) units. However, in two instances, respondents from the same nations were not in agreement about this issue, and it is apparent that "R & D" may not have the same connotations for all curriculum development personnel, even though they are serving in the same branches of the same ministry. There is apparently still no real clarity about whether curriculum change activties as currently practiced can be truly considered "research and development" in the scientific sense.

4. 88.9 percent reported that special units in their countries have been made responsible for evaluating existing curriculum and recommending necessary changes. The two respondents who did not answer affirmatively may have been reflecting a sense that evaluation per se is not a separate activity of any particular unit but is incorporated as a function of other curriculum development entities.

5. Most respondents (72.2 percent) stated that there is a supervisory unit which monitors the process of curriculum revision.

Again, however, there was disagreement about the matter between respondents from two of the same coutries. These differing perceptions may arise from different connotations for the words "control", "supervision", and "monitoring", or they may have been suggesting that the function was present, although a separate unit was not. A reverse interpretation is also possible -- that one respondent believed that such a unit was present but was not performing the monitoring function as it was intended to do.

6. Only one nation out of the 12 (5.6 percent of the 18 total responses) stated that it had no publications unit which was responsible for attending to the preparation of manuals and texts. Some ambiguity may be inherent in this question, again because it is not necessarily clear to respondents whether a publications "unit" is a functional responsibility of curriculum developers who have no separate section or unit to accomodate their text publication activities or whether a totally discrete unit is implied by the question. Though the latter was intended in the survey instrument, the possibility of misinterpretation does exist.

7. A small minority (11.1 percent) of the curriculum developers questioned said that there was no audio-visual or instructional media unit which was solely designed to assist in the curriculum development process. These respondents were from two separate nations: one with extensive financial resources and one with more limited funding. It is a justifiable inference, therefore, that the provision of media units to facilitate curriculum development processes depends in part on how reasonable this provision seems to planners, and not entirely upon the availability of monies for this purpose.

8. 72.2 percent of the respondents reported that units responsible for training of teachers to utilize new curriculum materials and methods had been provided for. In this instance, however, the negative responses may have more significance, for over one-fourth of the respondents have perceived that there is no unit which carries on the task of preparing teachers to implement the innovations.

Question I - B, items 1 though 6

The curriculum divisions or components within each country may interact with other units in the Ministry of Education in a variety of ways. Listed below are several of the typical units to which a curriculum development unit might relate. Please (✓) the units which you think are linked with the curriculum development unit and describe briefly the nature of the interaction between them.

Ministry of Education Units or Divisions	*Brief Description of Relationship of Each Unit to the Ministry's Curriculum Development Unit*
[ ] 1. *Educational Planning*	
[ ] 2. *Educational Research*	
[ ] 3. *Educational Statistics*	
[ ] 4. *Training*	
[ ] 5. *College of Education & Teacher Training Institutes*	
[ ] 6. *Examinations*	

Responses to Question I - B, items 1 through 6

The other units of ministries with which curriculum development agencies might be most closely associated have been assigned to six categories in this question. Responses appear as follows:

1. Educational planning- All respondents except two recognized the linkage between curriculum development and educational

planning, although their perceptions of the purposes of this linkage were different. Two thought the relationship was primarily budgetary; several others said that educational planning set the general philosophical tone and determined what projects would be undertaken. One respondent from Lebanon said that the educational planning function was part of the responsibility of a permanent unit which was also charged with preparing and applying the new curriculum, incorporating planning, research, statistical, and training functions. A Kuwaiti respondent reported that curriculum development leadership was represented on the general planning committee for education. A respondent from Qatar mentioned the consultative nature of the relationship between the planning and curriculum development units.

2. Educational research- 50 percent of the respondents indicated that a research unit in the ministry was linked to the curriculum development unit in their countries. Functionally, such units were viewed as performing routine and special research necessary for the revision of curriculum. One respondent said simply that, while a relationship between the two units exists, there is need for intensified research in the field of elementary education. A Tunisian curriculum developer, who saw no relationship with a Ministry research unit, offered a reminder that educational research in his country is carried out by an independent agency, not located within the Ministry.

3. Educational statistics- Among the responses which indicated no relationship to a statistical unit was an explanation that statistics functions were associated with the educational planning unit. Again, half of the respondents stated that statistical and curriculum development units were related, and that statistical data

was developed as necessary. Where there was any indication as to the nature of the statistics generated, they were of the counting or enumeration sort: e.g., numbers of students, teachers, and pieces of equipment.

4. Training- Nearly all respondents saw linkages between curriculum development and training (83.3 percent), and training is viewed as primarily aimed at teachers who will be asked to teach special subjects for which a new curriculum has been prepared.

5. College of Education & Teacher Training Institutes- Respondents in the same percentage (83.3) saw a connection between teacher education and curriculum development. The relationship was characterized as essentially one-way; College and institute faculty serve on curriculum committees and help to train specialists for curriculum development. Apparently, colleges are not themselves viewed as needing curriculum development services which the ministries might extend.

6. Examinations- 66.7 percent of those completing the questionnaire saw that examinations units and curriculum development units were linked, but there was little indication that curriculum development might itself produce changes in examination procedures. The opposite seemed to be true; several respondents indicated that curriculum might be altered on the basis of examination results. One person did state, however, that the examinations unit was engaged in the preparation of model exams to be used with a new curriculum for students at upper educational levels.

Question I - C

The exact composition of the Ministry's curriculum development unit or division varies from country to country. Please check (✓)

the categories of curriculum development personnel which are appropriate for your country, indicate the number of persons working in each category, and indicate the highest degree which each has earned.

Categories	*No. of Persons in each Category*	*Highest Degrees Earned*
☐ *1. Director*		
2. Special curriculum development subunits for the following:		
☐ *a. Arabic language*		
☐ *b. Foreign languages*		
☐ *c. Science*		
☐ *d. Social Studies*		
☐ *e. Publications*		
☐ *f. Instructional media (audio-visual)*		
☐ *g. Mathematics*		
☐ *h. Other (please list other specializations below)*		

Responses to Question I - C

The qualifications of directors of curriculum development units range from non-degree and certificate personnel to Ph.D.'s, but doctoral degrees are not necessarily in education or curriculum. In fact, only two specified that they had such degrees. A third of the total number of respondents (33.3 percent) said the director was a Ph.D. holder in some field of specialization; two people reported that the director had an earned master's degree (one in educational media); and others, where specified, were cited as qualified by virtue of university graduation, special diploma, or status as a general inspector of schools.

Some respondents did not specify numbers of personnel in each subunit named in the questionnaire (see page 17); others wrote in additional curriculum subunits like home economics, Islamic education, mathematics, etc. but did not state numbers of personnel involved in each subunit. One nation, Egypt, indicated that all sub-units have Ph.D. holders in their ranks, but numbers are not stated and there is no indication whether these degrees were earned in education. Although masters' degree holders are considered qualified to serve in subject-matter curriculum development subunits in Kuwait, it seems that most subunits have Ph.D.'s. There are seven specialists in Arabic language, six in foreign language, six in science, five in social studies, and seven in mathematics. One audio-visual or instructional media person was listed as having a Ph.D. in teaching technology. Other credentialed persons listed as members of Kuwait's curriculum development units were four master's degree holders in the science of education, one with a diploma in education, two with Ph.D.'s in psychology and two M.Sc. degree holders each in sociology and library.

In Iraq, Arabic language and science units have Ph.D. holders, but the highest degree in the mathematics section is a bachelor of science. There are eight people in this section. Instructional media has the highest number of personnel, with social studies and science close seconds (17, 15 and 12, respectively). Publications employs seven people; foreign languages, six; and Arabic language, five.

Oman reports that Ph.D. level personnel are working in Arabic language; Jordan has Ph.D.'s in foreign languages and social studies; and Qatar and Lebanon have personnel at this level in curriculum development sections for foreign languages and instructional media respectively. In all of these countries, other subject matter sections are staffed with master's or bachelor's degree holders or less. The most heavily staffed section is Jordan's instructional media component, with ten persons. Lebanon has from three to six specialists in the areas of Arabic language, foreign language, science, social studies, and publications. Jordan, Oman and Qatar have from one to three specialists in most of these areas. Other subjects, written in by respondents to the questionnaire (e.g., math, art, philosophy, Islamic religion, etc.) seldom have more than one permanent employee representing the area, if any.

Tunisia, Syria, and Sudan report that there are no more than one to four persons in each subject matter section, with the exception of the seven people working on science curriculum in Tunisia. Nearly all of these staff specialists have less than master's degrees.

Question I - D

Curriculum development divisions depend heavily on the information networks which they use to carry on their activities. From the list below, please select the information network components which you have in your country and mark them with a check (✓).

[ ] 1. *Information components necessary for curriculum development*

[ ] 2. *Information units about students, their numbers, their academic progress and their grade levels*

[ ] 3. *Information units about teachers, their numbers, their degrees and their academic productivity*

[ ] 4. *Information component which provides access to research results which are relevant for curriculum planning*

[ ] 5. *Information component which makes available the news of innovations in other countries concerning curriculum in general and in specific subject areas.*

Responses to Question I - D

Only 38.9 percent of the respondents checked the response showing that information components necessary for curriculum development were available to them as curriculum specialists. Accessibility of data was a bit more reliable concerning numbers of students, academic progress and grade levels; 66.7 percent reported that this information was at hand. In most cases, these kinds of educational statistics are regularly furnished by departments of statistics and/or departments of planning in the ministries of education. A slightly smaller number of respondents (55.6 percent) felt that there were information units which were specifically concerned with providing information about teachers, their members, their degrees and their academic productivity. In exactly the same proportion (55.6 percent), respondents recognized the existence of information components which provided access to research for curriculum planning and access to information about innovations in other countries. Thus it would appear that curriculum developers generally feel that information networks concerning students are relatively well established, but that other needed information is not so accessible. They felt least assured that networks specifically designed to supply information about curriculum development techniques were in place and satisfying their needs.

Question I - E

Central curriculum development divisions or units often make use of a variety of technical assistance subunits or associated agencies. Please check (✓) the technical assistance units or components which are available in your country.

[ ] *1. A component for science curriculum development*

[ ] 2. *A component for publications*
[ ] 3. *A component for instructional media*
[ ] 4. *A component for research in curriculum*
[ ] 5. *A component for analysis of information in curriculum*

Responses to Question I - E

Technical assistance components available to curriculum developers seem to be at a premium, particularly in connection with science education. Only 27.8 percent of the respondents said that they had such a technical assistance unit. 44.4 percent report having a publications unit; 61.1 percent say that an instructional media component is available to them; and 55.6 percent are able to call upon research units for technical assistance. The percentage (38.9) drops significantly in the responses which affirm the presence of a unit which analyzes information in curriculum. This means, of course, that well over half of the curriculum development personnel of the 18 surveyed do not have such an information processing and interpreting unit. Jordan commented that instructional media and research units are now in process of being operationalized.

Question I - F

Do you have adequate special physical facilities (buildings and/or equipment)? Please check (✓) the appropriate answer.

[ ] *Yes* [ ] *No*

Responses to Question I - F

Two thirds of the respondents felt that physical facilities and equipment were adequate for their purposes. Tunisia commented that the facilities available are distributed over all the different levels of education. Only four people said that facilities were definitely not adequate; two persons did not respond at all to the question.

Question I - G

Do you have a special budget for curriculum activities? Please check (✓) the appropriate answer.

[ ] *Yes* [ ] *No*

Responses to Question I - G

72.2 percent reported that special budgets were provided for curriculum development purposes. A Tunisian developer stated that this special monies is a part of the budget of the National Center for Educational Research, which is an agency outside of the Ministry. Three persons said that no special budget was available for their curriculum work; two others did not respond either affirmatively or negatively.

Category II: Factors Which Influence Curriculum Change and Development

This question postulates a series of possible social and political influences which may have bearing on the motivations of educational authorities in curriculum renewal. Ten options are provided, with a write-in category allowing respondents to offer ideas about other influential factors.

Question II, items 1 through 11

Any change or development in curriculum is usually produced as a response to many significant factors--social, economic, or educational. Please check (✓) each of the factors which you find are most influential on curriculum change or development in your country:

☐ 1. *New educational policies or strategies*
☐ 2. *Changes in the educational structure*
☐ 3. *Dissatisfaction of the persons responsible for curriculum*
☐ 4. *Dissatisfaction of parents*
☐ 5. *Dissatisfaction of students*
☐ 6. *Results of research studies in curriculum and education*
☐ 7. *Scientific and technological progress*
☐ 8. *Social change*
☐ 9. *High level of wastage (student failures or grades repeated)*
☐ 10. *Need for certain kinds of manpower*
☐ 11. *Other (Please specify.)* ______________________________

Responces to Question II, items 1 through 11

Item 1 - Fifteen respondents (83.3 percent of the total) agreed that new educational policies or strategies were powerful motivators for curriculum development.

Item 2 - Twelve people (66.7 percent) agreed that changes in educational structure had a significant influence.

Item 3 - Sixteen curriculum developers (88.9 percent) felt that their own dissatisfaction with existing curriculum was a potent factor in the initiation of change.

Item 4 - Only six respondents (33.3 percent) thought that dissatisfaction of parents had a significant bearing on the curriculum reform movements.

Item 5 - Dissatisfaction of students seemed to have more impact, as the persons surveyed viewed the situation. Half (50 percent) of all respondents checked this option.

Item 6 - Fourteen persons (77.8 percent) indicated that research studies in curriculum and education were significant factors.

Item 7 - Fifteen respondents (83.3 percent) checked scientific and technological progress as a motivating influence on curriculum change.

Item 8 - Social change did not seem to be a popular option. Only 44.4 percent marked this item (8 people).

Item 9 - Educational wastage was viewed in much the same light as social change; only 44.4 percent selected this option as having significant influence.

Item 10 - Ten respondents (55.6 percent) only thought that the need for certain kinds of manpower had any deciding voice in curriculum improvement.

Item 11 - Other possible influences suggested on the write-in section were the need to change curriculum to meet the needs of the modern Arab world -- for example; the need for modern mathematics -- and the formation of special development committees, a movement which grew out of the desire to modernize all educational activities.

Item 1, 3, 6 and 7 elicited high agreement among respondents. There was moderate agreement on items 2, 5, 8, 9 and 10, and low agreement on item 4 only. The dissatisfaction of parents (item 4) is either not present, not recognized, or not viewed as significant by two-thirds of the curriculum specialists.

Category III: Initiation of Curriculum Change and Development

In the study of change processes in any sort of institution, educational or otherwise, it is important to understand who the initiators are, in terms of their organizational positions and their occupational roles. It is also of great importance to know how the institutions involved in change view the obstacles to their own successful renewal. This category addressed these important variables.

Question III - A, items 1 through 7

What are the agencies which initiate change and curriculum development in your country?

Please check (✓) the appropriate answers:

[ ] 1. *Central educational planning division*
[ ] 2. *Regional educational units (institutions, schools, etc.)*
[ ] 3. *School principals and their associates*
[ ] 4. *Specialized teachers*
[ ] 5. *Curriculum specialists*
[ ] 6. *College of education and teacher training faculty*
[ ] 7. *Mass communication*

Responses to Question III - A, items 1 through 7

Item 1 - Nine respondents (50 percent) said that a central educational planning division initiates curriculum changes, although the Jordanian specialist qualified this answer with an accompanying "sometimes."

Item 2 - Only two people (11.1 percent) indicated that regional agencies might be involved. A Tunisian representative was definite about this, but again the Jordanian who checked this item qualified his response by adding "sometimes."

Item 3 - Respondents from Tunisia, Lebanon, and Jordan each felt that school principals and their associates had some involvement in initiation of curriculum change (representing 16.7 percent of the respondents).

Item 4 - Five persons (27.8 percent) agreed that specialized teachers might also initiate change. The Egyptian specialist felt this was true "sometimes", at least, but the Jordanian respondent stated that this was "often" the case. The other respondents choosing this option were from Tunisia, Syria, and Iraq.

Item 5 - Overwhelmingly, the fifth option received the most votes; 72.2 percent said that curriculum specialists are the primary change initiators.

Item 6 - Eight respondents (44.4 percent) marked the involvement of faculties of colleges of education and teacher training institutes as significant in introducing change activities.

Item 7 - Only 27.8 percent of those answering this question selected item 7, mass communication,as at all significant. Two who chose this option were hesitant about it also, saying that it had "limited" effect.

Of the seven options, only item 5 evoked high agreement among the respondents. Items 1 and 6 elicited moderate agreement. There was low agreement on items 2, 3, 4, and 7, indicating that, on the whole, these were not considered important options. One Kuwaiti respondent added an eighth possibility -- that the society of educators itself was an important initiator of change.

Question III - B, items 1 through 5

How is curriculum change initiated in your country? Please indicate with a check (✓):

[ ] *1. From the "top down", with top administrators mandating*

change and directing the efforts of subordinate staff

[ ] 2. *From the "grass roots", with change initiated and implemented in individual schools at the local level*

[ ] 3. *By "demonstration", the introduction of innovative projects in one school or a limited number of schools*

[ ] 4. *Combination of the above*

[ ] 5. *Other (Please specify.)* ______________________________

Responses to Question III - B, items 1 through 5

Item 1 - Fourteen respondents (77.8 percent) characterized their curriculum change process as "top down", with top administrators mandating change and directing the efforts of subordinates.

Item 2 - Four persons (one each from Tunisia, Egypt, Iraq, and Kuwait) also indicated that there was "grass roots" change initiation. This amounted to a 22.2 percent agreement on the item.

Item 3 - Representatives from the same four states (Tunisia, Egypt, and Iraq, and Kuwait) also indicated that demonstration projects were one way in which change was being initiated, again producing a 22.2 percent agreement among all respondents.

Item 4 - Six persons (33.3 percent) thought that curriculum change was initiated by a combination of top-down, grass-roots, and demonstration or model school methods.

Item 5 - In the "other" option, the Egyptian respondent stated that change is also initiated by industrial institutions which suggest technical and vocational subjects for the five-year schools. Two of the Kuwaiti respondents mentioned the "development committee," and the Center for Research on Curriculum.

There was low agreement on every item in this question except the first, indicating that the "top-down" mode of curriculum change initiation is perceived as most pervasive.

Question III - C

In your opinion what are the most important problems affecting the process of change and development of curriculum in your country?

Responses to Question III - C

The responses in this section are identified by country because the problems cited are often situationally defined. Qatar, for example, reports that the lack of clarity of vision about future social changes produces uncertainty about what curriculum changes to make. At the same time, there is a recognized need for experts who will be able to initiate suitable innovations. Qatari experts are concerned about the lack of serious support, from some responsible people in the Ministry, for the fulfilling of curriculum development requirements. They believe the present evaluation methods are not congruent with new curriculum, and they are unhappy about the qualifications of teachers, and the cultural biases of foreign teachers. They suggest that many teachers do not use the new methods and materials even when they are available, because these teachers are dissatisfied professionally.

Tunisia reports that the curriculum development effort is hampered by a lack of specific budgeting for that purpose. The present working relationships among Ministry personnel, educational institutes, and universities are not viewed as facilitative. These respondents are unhappy with the accessibility of information about curriculum development in modern nations and the shortage of books and articles on the subject. They are also disturbed about the difficulty of obtaining educational media, particularly when what is needed is not available in the local market. Recycling or retraining teachers in service, and pre-training those about to enter service, fast enough to meet the demand was also cited as problematic.

Kuwaiti respondents listed the following (1) insufficient and insufficiently trained human resources to accomplish change, (2) insufficient materials, financing, and technology, (3) inefficiency of existing staff in carrying out development activities, (4) not enough involvement of researchers, (5) insufficient time for experimental work, and (6) lack of understanding of the new form of curriculum development on the part of Ministry administrators, inspectors, and school teachers. The difficulty of training teachers to utilize new curriculum with understanding and commitment was also cited as a serious problem in Kuwait.

Saudi Arabian respondents spoke of the difficulty of convincing others, at base level, of the necessity for and importance of change. There was also concern expressed because the level of qualification of Saudi teachers is inadequate, and extensive additional training is needed.

In Sudan, the feeling was that qualified persons are simply not available, and that the budget is much too limited. Syria expressed concern about the retardation of development owing to the lack of up-to-date knowledge in science. Iraq called for a specialized cadre of curriculum experts who can manage the change efforts. Oman also regretted the lack of specialists and the difficulty of preparing subjects for the textbooks. Jordan cited the shortage of well-trained and educationally qualified curriculum personnel and teachers and the lack of financial support for change efforts. Egypt suggested that a major problem was the lack of reliance on findings from studies and research and the resulting lack of clarity in thinking about education. There seemed to the Egyptian respondent to be a lack of commitment to the experimental approach and a "partial" accomodation to the change process.

Category IV: Planning for Change and Development in Curriculum

The fourth subdivision of the questionnaire asks about frequency of curriculum reform, about the planning processes or steps involved in these reforms, and about the assignment of planning responsibility. A final part of this category asks whether financial estimation is an operational part of the planning process.

Question IV - A, items 1 through 5

How often does curriculum change occur in your country? Please check (✓) the answer which is most applicable:

[ ] 1. *Every year*

[ ] 2. *Every five years*

[ ] 3. *Whenever there are definite problems or discrepancies in the educational process*

[ ] 4. *When the responsible person on the Ministry level mandates it*

[ ] 5. *Whenever the people who are concerned about educational processes in the schools and classrooms see the need for change*

Responses to Question IV - A, items 1 through 5

Item 1 - Three respondents, from Oman, Iraq, and Kuwait, said that some curriculum change occurs every year. However, this item was favored by 16.7 percent of all respondents.

Item 2 - Two Kuwaitis reported that curriculum change occurs every five years, and Jordan wrote in the figure six to indicate an approximation to the period specified on the questionnaire. These have been combined, producing an agreement of 16.7 on the five-year frequency.

Item 3 - 72.2 percent agreed that curriculum is changed whenever there are definite problems or discrepancies in the educational process. Jordan's respondent added that these changes tended to be "non-basic" or minor.

Item 4 - Ten persons (55.6) percent stated that change occurs whenever mandated by the leadership in the Ministry.

Item 5 - 22.2 percent thought that the occurrence of expression of concern from the public and from educators determined the frequency of change efforts.

Item 3 was the only option to be given strong support. There was moderate agreement on item 4, and low agreement on items 1, 2, and 5.

Question IV - B

Describe the usual planning process involved in change and curriculum development in your country.

Responses to Question IV - B

Again, because of situational uniqueness, the constructed answers to this question are identified by nation. A composite of the four responses from Kuwait indicates that there are two types of curriculum planning committees -- a higher committee which is a permanent body in the Ministry and temporary committees formed by request of the highest authority. The temporary, special purpose committees cooperate with the Center for Research on Curriculum to devise research studies, curriculum objectives, and methods of implementation before submission to the higher or general committee for approval. Subcommittees are also formed to support the work of the special, temporary work groups. Once a new curriculum is approved, experimentation begins, followed by evaluation of the experiments and generalization of the results as it seems warranted.

The higher committee makes the decision whether generalization should proceed.

A respondent from Tunisia states that the change planning process begins with the formation of a national committee, composed of experts in higher education and inspectors and teachers from secondary education. The committee formulates the basic plan and prepares for experimental implementation. Oman says that the planning process begins with research, to discover the weaknesses of existing curriculum. Minor changes are made during the year, and larger revisions are made before the start of school in the following year.

Saudi Arabia reports that the planning process begins in reaction to complaints about existing curriculum or in response to the need to meet political, social, and economic needs. The necessary data and reports are prepared concerning the change, and the committee of curriculum specialists who will plan the change meets to begin its work. This committee prepares a report which is taken before a meeting of a higher committee for curriculum planning, which also submits the report to the Minister of Education. Branch committees of the higher committee prepare further reports which are taken under advisement by the parent committees and forwarded to the cabinet of the Ministries. The higher committee then reports the acceptance or rejection of the proposed changes.

In Qatar, it appears that "when there is a need for change, the whole educational system helps in identifying, modifying or creating the new form, to be experimented on, evaluated and validated."

A technical committee is gathered, in Sudan, to study a part of the curriculum and to make recommendations for change. The Curriculum Administration and the Institute of Education present the plan to be applied. The process as reported from Syria begins with a drawing up of general guidelines: i.e., general objectives of education. This is followed by preparation of new curriculum for every level of every subject. Finally, competitions are announced for text writing. Jordan states that a plan is approved in the council for education which is composed of experts. A permanent committee then takes charge of development and research which results in new texts.

Lebanon's curriculum planning process begins with the presentation of a problem by the planning department or the various curriculum units. The situation is studied on all affected school levels, general objectives are specified, and objectives are then written for each level. Once these are prepared, curriculum specialists submit the plans for suggestions and revisions. Finally, a detailed plan is completed and a timetable for implementation agreed upon. Evaluation of attitudes concerning the changes is a part of the follow-up activity.

Question IV - C, items 1 through 8

Which agencies or individuals are responsible for planning for change and development of curriculum? Please check (✓) the appropriate answers:

[ ] *1. Head of planning division within the Ministry of Education.*

[ ] *2. Curriculum specialists*

[ ] *3. Principals*

[ ] *4. Specialists in educational evaluation*

[ ] *5. Specialists in educational research*

[ ] *6. Specialists in different subject matter*

[ ] *7. Agencies*

[ ] *8. Other (Please specify.)*

Responses to Question IV - C, items 1 through 8

Item 1 - Six respondents (33.3 percent) chose option 1, although one from Kuwait said that it is not only the head of a planning division who is responsible for change designs, but also the individual members. Other respondents who indicated that there is a ministry unit responsible for this change and development planning were from Iraq, Qatar, Lebanon, and Tunisia. It appears that half of the 12 nations studied have such agencies, although two-thirds of the 18 respondents did not report this to be the case.

Item 2 - There were 14 persons in agreement that curriculum specialists carry the major planning responsibility. This was the most heavily favored option, with 77.8 percent selecting it.

Item 3 - Principals of schools were thought to be involved in the planning process by seven respondents, 38.9 percent of the total answering the questionnaire.

Item 4 - 55.6 percent thought that specialists in educational evaluation were among the planners.

Item 5 - Specialists in educational research were identified as planning personnel by 61.1 percent of the sample.

Item 6 - A similar number (61.1 percent) recognized subject-matter specialists as belonging to the planning group.

Item 7 - Other agencies were reported by six people (33.3 percent) to be part of the curriculum change planning process, though these agencies were not identified.

Item 8 - Some of the unnamed agencies from item 7 may appear in the "other" category allowed in item 8. These "other" types of personnel are identified as follows: (1) university faculty and national "families"

(Saudi Arabia), (2) various experts in the Ministry, teachers, parent representatives and public figures, and representatives from the media center (Kuwait), (3) curriculum directors in all fields (Jordan), (4) the central literacy office (Syria), (5) professors, inspectors and craft workers (Tunisia) and (6) technicians as needed (Sudan).

The only item on which there was high agreement among the participants in the survey was item 2. There was moderate agreement on items 3, 4, 5, and 6, with low agreement on options 1 and 7. Curriculum development specialists are obviously viewed as the persons most responsible for planning the process of curriculum change.

Question IV - D

Indicate the types of organizations which are involved in the process of planning for curriculum change (e.g. committees).

Responses to Question IV - D

In general, respondents reiterated the descriptions of various committees and advisory groups which they had previously mentioned in questions on planning and process. Additional committees cited here were a consultant committee advising curriculum personnel on needs of industry, etc. and committees or councils acting as approval bodies. Text writers, university faculty members, experts from other Arab countries, seminars and research groups, evaluators, and staff secretaries were named also as organizational or individual contributors to the process of planning curriculum change.

Question IV - E

Do you make use of financial estimation in the process of planning curriculum change?

☐ *Yes*

☐ *No*

Responses to Question IV - E

There were fourteen affirmative responses to this question (77.8 percent), although Tunisia stated that the degree of financial estimation in which curriculum developers are involved is limited.

Category V: Design and Revision

Respondents were asked in this section to review the mechanisms and strategies they use to carry out the actual design process in curriculum building and revision. Knowing that some Arab nations are beginning to specify learning objectives, the researchers were interested to know at what level of generality this is happening and whether other curriculum developers in the Mid-East are interested in learning more about behavioral task analysis and the establishing of performance criteria. Another aspect of this investigation was to determine to what extent instructional media are viewed as an integral part of lesson planning and execution. The curriculum developer's degree of familiarity with contemporary learning theories was also an item of concern.

Question V - A, items 1 through 8

The process of curriculum design and revision consists of many interrelated educational planning activities. Please Check (✓) the activities which are carried on in your country in connection with curriculum change:

☐ 1. *Stating the strategy and rationale for such change*

☐ 2. *Stating the objectives of the new curriculum on the following levels:*

    ☐ a. *General objectives*
    ☐ b. *Specific objectives*
    ☐ c. *Performance objectives*

☐ 3. *Task analysis for the content of the new curriculum*

☐ 4. *Consideration of learning theories which may be facilitative of the success of the new curriculum*

☐ 5. *Establishing criteria for evaluation*

☐ 6. *Determining content for texts; teacher and student manuals*

☐ 7. *Design of media to facilitate understanding of the new curriculum*

☐ 8. *Other (Please specify .)* ______________________________

Responses to Question V - A, items 1 through 8

Item 1 - Sixteen persons (88.9 percent) said that the strategy and rationale for curriculum change is stated in advance of implementation.

Item 2 - Twelve respondents (66.7 percent) report that objectives are also stated. Of these 12, nine said that these were stated at the (a) general, and the (b) specific levels. Only three respondents (from Kuwait, Saudi Arabia and Oman) claimed that objectives were stated in performance terms. What this means, of course, is that half of the curriculum developers polled consider that objectives are written at general and/or specific levels and that only 16.7 percent believe the objectives are behaviorally specified.

Item 3 - 77.8 percent say that a task analysis is performed on the content of new curriculum.

Item 4 - Application or consideration of learning theories in curriculum planning is a recognized part of the responsibilities of 55.6 percent of the planners. This leaves a large 44.4 percent who do not consider the scientific evidence on how learning can be facilitated in the new curriculum.

Item 5 - Twelve respondents (66.7 percent) say that criteria for evaluation are taken into account in the planning process, but Tunisia adds that evaluation is currently viewed very traditionally in curriculum reform in that country.

Item 6 - 77.8 percent agreed that planners are engaged in determining content of texts, and teachers' and students' manuals.

Item 7 - As in item 6, 77.8 percent thought that media to facilitate understanding of the curriculum were incorporated in the planning.

Item 8 - Other elements not in this part of the questionnaire but written in on some of the response sheets were the preparation of supportive educational television programs, consideration of resources of school libraries and laboratories, field tests of new units, and evaluation of new curriculum and teaching procedures and their outcomes.

There was moderate to high agreement on all of the items in this question except for the item on performance objectives.

Question V - B, items 1 through 5

What are the supportive activities undertaken in your country to assist in the implementation of new curriculum? Please check (✓) the answers which apply:

[ ] 1. *Textbook development consistent with new curriculum*

[ ] 2. *Development of teachers' manuals*

[ ] 3. *Development of students' manuals*

[ ] 4. *Production of media resources*

[ ] 5. *Other supportive means or activities (Please specify.)*

Responses to Question V - B, items 1 through 5

Item 1 - Sixteen people (88.9 percent) said that textbook development consistent with new curriculum is a regular supportive activity in their countries.

Item 2 - A like number (88.9 percent) add that developing teachers' manuals is also a part of the process.

Item 3 - Students' manuals are not as consistently a concern of curriculum developers. Only five respondents (27.8 percent) said that these manuals were prepared, though not necessarily in every subject.

Item 4 - 66.7 percent state that media resources are produced in connection with the new curriculum, but some admitted also that this is done on a very limited basis.

Item 5 - Other supportive activities listed were preparation of radio and educational TV broadcasts, consideration of laboratory equipment and libraries, and training of teachers.

The item least supported, according to the survey, is the preparation of student manuals (item 3).

Question V - C

Describe the process used for developing and publishing or producing new textbooks to accompany curriculum change.

Responses to Question V - C

Preparation of textbooks and manuals seems to follow a fairly standard format in all of the nation's surveyed. Subject matter committees establish guidelines for text authors. Writing is done either by an appointed subject-matter committee or in a competition which individual writers may enter. Art work is done by artists and printers are also involved in aesthetic presentation of the text materials, once texts have been checked by subject-matter authorities and approved by higher committes in the Ministry. Modifications, if any, are made prior to publication and distribution. Some nations have special departments or centers which have general oversight concerning text preparation, illustration, publication, and distribution. Universities are sometimes asked to provide printing services, as well as to participate in text preparation.

A Qatari respondent detailed the text preparation process in a slightly different fashion, emphasizing the specification of concepts, skills, and behaviors to be learned and the necessity for assuring congruence of the text with the national educational philosophy.

Question V - D

What is the process used for producing other media resources to be used with the new curriculum?

Responses to Question V - D

All respondents said that instructional media are prepared according to the needs which arise in the course of preparation of the curriculum. The curriculum development committees or specialists request the needed media from Ministry instructional media units, and this unit makes arrangements for local production or authorizes purchase of the materials abroad. Texts, as print media, are sent to the Administration of Instructional Media in Kuwait for illustration. Teachers sometimes prepare simple audio-visual aids for their own classrooms, in settings where facilities are available.

Category VI: Experiment for Change in Curriculum Development

Traditionally, curriculum innovation has been a matter of government decree, on the basis of the state of knowledge in education in the Arab world. Now, several school systems are making use of experimental or "campus" schools which are associated with teacher education programs to test new curricular materials as well as to test implement major new educational reforms. The purpose of this category was to evaluate the pervasiveness of understanding and the depth of commitment which curriculum development departments have to use of the experimental method.

Question VI - A

In the design and implementation of new curriculum in your country, does the planning agency or curriculum development unit conduct experimentation before generalizing the new curriculum nationwide?

[ ] *Yes*

[ ] *No*

Responses to Question VI - A

Thirteen curriculum specialists (72.2 percent) responded that experiments are conducted with new curriculum, although two of them qualified their answers by adding "sometimes." The respondent from Sudan reported that curriculum in elementary education and junior high school is experimentally treated, but not the curriculum of the high school. Three persons said that no experimentation was conducted, and several others abstained from answering.

Question VI - B

Describe the steps which are taken in new curriculum experimentation, if any. ________________________________

Responses to Question VI - B

Respondents from seven nations spoke of experimentation either being conducted or being planned in the following terms: the steps of experimentation include studying the environment, selection of similar

Question VI - D

Does the experimental design include a pilot study?

[ ] *Yes*

[ ] *No*

Responses to Question VI - D

44.4 percent of the curriculum specialists said that pilot studies were a part of their country's experimental procedure. 27.8 percent said that such studies were not customary, and 27.8 percent abstained from answering.

Question VI - E

What are the major steps taken in experimenting with a large sample?

Responses to Question VI - E

Jordan stated that a decision is made on the objectives of the experiment, subjects are selected, researchers are trained to conduct the experiment, data is collected, results are evaluated, and new decisions are necessitated concerning next steps to be taken. The process as described by Kuwait includes testing with a small sample (one or two schools) for one year, and then extending to other schools. None of the respondents actually addressed the question of testing large sample populations in any specific way.

Question VI - F

How do you record the results of experimentation?

Responses to Question VI - F

The answers to this question were of two types: some aimed at describing the process of data collection and others named the kinds of participants involved. Results of experimentation are observed in the field, obtained through assessing responses on teacher and student questionnaires, inferred from statistical surveys, and evaluated through results of student achievement testing. Observers may be members of follow-up teams or special committees designated to monitor the progress of the curriculum innovation. In Kuwait, it is reported, researchers from the Center for Research on Curriculum conduct the field studies and utilize various kinds of evaluation instruments to ascertain the success of the experiment.

Question VI - G

Discuss the steps which are taken to utilize the results of the experimental work prior to wider dissemination of the new curriculum.

Responses to Question VI - G

Although the primary reason for experimental work is to provide evidence for or against the adoption of a new curriculum (or parts of it), it is not immediately apparent from the responses exactly how decisions are justified. Whether research is conducted by curriculum committees or by special research centers, the data generated is presented in a series of discussion groups and conferences, and may subsequently lead to curriculum or methodological revisions and readjustments, usually in the form of changes in texts and manuals. In this set of answers, there is no information as to what criteria are used to identify problem areas, or to measure success, or to decide whether or not to generalize the revised curriculum.

Category VII - Implementation and Dissemination of Curriculum Change and Development

Because curriculum structures in most of the Third World nations are inherited from European systems, the classical lecture method of teaching is most widely used. Though there is awareness that school teachers and administrators have a primary role in implementation of new curriculum, modern teaching methods which facilitate the learning of concepts and processes are typically not a part of the teacher's repertoire. The category which investigates implementation seeks to discover whether a new focus on teaching practice is beginning to supercede the heavy concentration here-to-fore on preparation of new texts and content revision in curriculum development practice.

Question VII - A, items 1 through 7

Sometimes, when dissemination of newly developed curriculum begins, important new concepts and methods are not very clear. Please check (✓) the agencies or groups which you think are responsible for clarification of these concepts and methodologies:

☐ *1. Ministry of Education (central office)*

☐ *2. Principals*

☐ *3. Specialized teachers*

☐ *4. Researchers*

☐ *5. Media specialists*

☐ *6. Curriculum specialists*

☐ *7. Public relations personnel*

Responses to Question VII A, items 1 through 7

Thirteen respondents (72.2 percent) felt that the central office of the Ministry was responsible for clarification of concepts and methodologies attending new curriculum. 44.4 percent thought that school principals would need to assume some of the responsibility for clarification, and 38.9 percent believed specialized teachers had a similar role to play. Respondents thought researchers and curriculum specialists should be especially involved in the clarification effort (61.1 percent checked options 4 and 6). Media specialists were named by 33.3 percent and public relations personnel were considered least often, at 22.2 percent. It appears that an overwhelming majority look to the Ministry to interpret and promote new curriculum which is about to be generalized.

Question VII - B, items 1 through 5

Please indicate with a check (✓) the steps which are usually included during the process of generalizing a new curriculum in your country:

☐ *1. Units are established to supervise continuing implementation of the new curriculum after its initial introduction.*

☐ *2. Reports are written and statistics are collected concerning the new curriculum change.*

☐ *3. Persons responsible for implementing the new curriculum meet periodically to discuss all phases of the process, including orientation and introduction, identification of problems as they arise, and resolution of these problems.*

☐ *4. Site visits to schools which have successfully implemented that new curriculum are organized and encouraged.*

☐ *5. Comments and complaints of students and parents are listened to and provide a basis for improving the implementation process.*

Responses to Question VII - B, items 1 through 5

61.1 percent of those answering the questionnaire said that monitoring units are established to advise and evaluate curriculum for a period of time after its initiation. A larger number (83.3 percent) stated that reports are written and statistics are collected pertinent to the change effort. 72.2 percent reported that periodic meetings are held to discuss all phases of the process and 61.1 percent said that site visits to model schools are encouraged. A like number (61.1 percent) said that they as curriculum developers listen to and use ideas submitted by parents and students. Documentation of the experience which results from implementing the new curriculum seems to be the most critical concern.

Question VII - C, items 1 through 10

Please Check (✓) the activities which involve cooperation between your country and other countries in the region (if any):

☐ 1. *Conference for research and curriculum development*

☐ 2. *Site visits by curriculum or media specialists to study the curriculum development process in other countries*

☐ 3. *Exchange of teachers*

☐ 4. *Exchange of students*

☐ 5. *Exchange of textbooks*

☐ 6. *Utilization of consultants from other countries*

☐ 7. *Cooperative projects in research and model-building in curriculum theory*

☐ 8. *Giving study leave for curriculum specialists for comparative study in other countries*

☐ 9. *Participation in conferences and meetings organized by ALESCO.*

☐ 10. *Participation in international conferences and meetings (e.g., UNESCO)*

Responses to Question VII - C, items 1 through 10

Cooperative efforts with other nations in the region were seen as significant in several of the listed areas and minimal in others. Conferences for research and curriculum development were at the top of the list, having been chosen by 72.2 percent of the respondents. The next items most often indicated were site visits, participation in Arab League

(ALECSO) conferences, and utilization of outside consultants (66.7 percent). UNESCO and other international meetings were named by 61.1 percent.

Exchange of text books and exchange of teachers were checked by 50 and 38.9 percent respectively. A Tunisian correspondent said that texts are exchanged in science, mathematics and language subjects only. A third of the respondents said that granting leave to study curriculum processes in other countries was a feature of their nation's cooperative efforts. Exchange of students and cooperative projects in research and curriculum model-building were least cited, by five respondents each. The 27.8 percent who marked the latter option came from the countries of Iraq, Jordan, Qatar, Tunisia, and Sudan.

Question VII - D, items 1 through 4

There are several steps which may be taken as precautionary measures prior to implementation of a new curriculum. Please check (✓) the steps which regularly occur in your country:

[ ] 1. *Orientation of teachers and principals in schools where the newly developed curriculum will be implemented, to insure their understanding of what is planned.*

[ ] 2. *Training of teachers in the utilization of all dimensions of the new curriculum*

[ ] 3. *Production of a textbook that is designed to facilitate understanding of the methods and content of the new curriculum*

[ ] 4. *Production of other instructional media for use with the new curriculum*

Responses to Question VII - D, items 1 through 4

Among the preparatory steps listed in this question, orientation of teachers and principals seems least likely to occur. Only 38.9 percent said the orientation step was a part of their new curriculum implementation process. 55.6 percent said that media production was included, and two-thirds of the respondents (66.7 percent) indicated that both training of teachers and production of text books are attended to. One respondent listed two other preliminary steps: the providing of information to parents and students and the changing of examination procedures and questions.

Category VIII: Evaluation

The evaluation of learning and learning programs is a complex issue and controversies over what to evaluate, when, and for what purpose constantly plague educators around the world. What is most apparent is that success on preparatory or university entrance exams does not necessarily imply success in high school or higher education, particularly if the student is to be assessed in terms of his actual ability to utilize what he has learned. Furthermore, traditional systems emphasize cognitive competence and social conformity, to the disadvantage of students who, whether they like it or not, must learn to cope with phenomenally rapid social, economic and political change in their own nations and in the world at large.

This category explores opinions as to what evaluation is, how it is built into new curriculum programs, and how data collected is used to alter the next steps in the continuous process of curriculum change and development.

Question VIII - A, items 1 through 3

Educational evaluation procedures are often inadequate because they are not carefully planned in advance or because there has been a lack of training for the persons asked to do the evaluating. Please indicate (✓) the factors which you think are most influential in determining the adequacy of curriculum evaluative procedures in your country:

☐ 1. *Decisions of educational policy makers*

☐ 2. *The general direction and philosophy of curriculum development within the country*

☐ 3. *The certification and employment of curriculum specialists in evaluation*

Responses to Question VIII - A, items 1 through 3

This seemed a difficult question for respondents to answer without making specific reference to various committees, research centers or departments. Two thirds of the curriculum specialists viewed central Ministry education policy makers as most influential in establishing the theory and practice of curriculum evaluation, and considered the general direction and philosophy of curriculum development within the country as a critical factor. They typically viewed item 2 as a delegated responsibility which educational policy makers turned over to curriculum departments, education directors, or even regional offices. Kuwait alone indicated that certification and employment of curriculum specialists was in the hands of other specialists and researchers who were qualified, at least to some extent, to identify and hire competent people. Even so, there was no agreement as to who should evaluate incoming curriculum development personnel, the Ph.D. level subject matter supervisors or the leadership of the Center for Research on Curriculum. Nor was there any clue as to what criteria would be used to obtain qualified and experienced evaluators.

Question VIII - B

How does the process of evaluation in curriculum development occur?

Responses to Question VIII - B

Cited most often were questionnaires and observational site visits for purposes of collecting data about the new curriculum experiences. Teachers are surveyed with considerable regularity, according to the respondents, and school administrators, parents, and students are also queried in regard to their impressions of particular curriculum development projects. Reports from various Ministry agencies and school inspectors fill in the typical pattern of assessment.

Examination results and statistical analysis provides yet another information component. Committees take all of this local information, add to it what is known about scientific research and comparative studies on curriculum, and then, after thorough discussion, decide what needs changing. The next step, of course, is to accomplish the specified revision and prepare texts and teacher training sequences.

Question VIII - C

How are the results of the evaluation of new curriculum profitability utilized?

Responses to Question VIII - C

Very little new data emerged from the answers to this question, probably because respondents perceived it as almost identical to the preceding question. Most of the responses expanded on the concept of "evaluation before generalization," annual revisions, relating the new curriculum to the environment, and modification of the teaching process.

Question VIII - D

Do you use the results of curriculum evaluation to change or develop the curriculum on a continuing basis?

Responses to Question VIII - D

Although no "yes" or "no" options were provided for this question so that a specific count could be made, responses were generally affirmative. One respondent was not certain that this claim could legitimately be made, since curriculum revisions were almost entirely confined to textbook alterations, in his country.

* * *

Question VIII - E

Do you use a feedback system in curriculum development? How?

Responses to Question VIII - E

There was not much difference between this question and question VIII - B, as perceived by the persons surveyed. Some simply gave affirmative answers, but did not state the nature of the feedback system. Others said that feedback came to the curriculum developers by way of supervisors' and teachers' reports and parental and educator advisement. A few suggested that feedback from experimental schools was a vital necessity. One person remarked that feedback systems "*should* happen," but he apparently felt that present provisions for information flow leave much to be desired.

* * *

Question VIII - F

What are the problems encountered in evaluation of the process of curriculum development?

Responses to Question VIII - F

Answers to this question became much more explicit and obviously charged with a considerable amount of frustration. The most commonly held opinion was that there simply are not enough curriculum development and evaluation specialists, and that those who are given these responsibilities are often not adequately trained. Added to these difficulties are problems of relying on inexperienced or very traditional teachers, school administrators and inspectors to implement changes that are not well understood. Differing nationalities of teachers within a single school often pose inter-cultural problems, and there is lack of credibility and mistrust of curriculum evaluators. One respondent said there was a great gap between the emergence of ideas, the printing of reports, and the actual use of new technologies by the curriculum specialist.

There is an insufficiency of evaluation tools besides the lack of human resources to use them. Teachers along with Ministry personnel are viewed as not realizing the importance of research and evaluation techniques, and as a result field observations may not be accurate. There are a number of misconceptions about the contemporary forms of educational guidance (including formative evaluation), and respondents said that there are few people who really understand the process of educational change.

Tunisia reported a special problem: the difficulty of evaluating progress in new technical and vocational course offerings and practicum.

Category IX: Major Issues in the Process of Curriculum Devleopment (Including the Role of Research, Participation in the Process, and Decision-Making)

Respondents were asked specifically in this section whether there are research units available to them and whether research is a recognized part of curriculum development and change. They were also asked what areas of education they felt were in need of research, and what problems researchers faced. A second section listed various kinds of school and community personnel, and what degree of participation each had in the curriculum development process. Related to issues of participation are issues of decision making, and these problems were addressed in this category.

Question IX - A, items 1 through 5

1. *Do you have research machinery which serves the major administrative unit or units responsible for curriculum development?*

   ☐ *Yes*

   ☐ *No*

2. *To what extent does your country utilize educational research in curriculum development? Please check (✓) the answer or answers which apply:*

   ☐ *a. Research is a recognized part of the process of change and curriculum development.*

   ☐ *b. Research is viewed as a supportive effort made by planning and finance agencies within the Ministry of Education.*

   ☐ *c. Research is the responsibility of well-trained planners who can use research and evaluation techniques on a large scale.*

3. *On the basis of 100 percentage points, please indicate what portion of educational research you think should go to the following curriculum development areas:*

   ________% *New content*

   ________% *New methods*

   ________% *New materials*

   ________% *New designs for school facilities*

________% *School services*

________% *New models for curriculum development*

________% *Other (Please specify.)* ____________________

4. *What changes in existing research methods would you like to see made in order to improve the curriculum development process?*

5. *What are the problems which need to be overcome in curriculum development research?*

Responses to Question IX - A, items 1 through 5

77.8 percent agreed that a research unit had been formed in or connected with the Ministry, to serve curriculum developers. Three people said no such unit existed and one person abstained from answering. Nearly as many (72.2 percent) were convinced that research is a recognized part of the curriculum change effort; only two people said that it had a planning and financially motivated basis and a role that was merely supportive. One person checked the "c" option, stating that research should be left to well-trained persons who could use research and evaluation techniques on a large scale.

Because respondents' percentages often totaled more than 100 in item three, there is a distortion in the data. However, it is clear that new content, new methods and new models for curriculum development were the categories which respondents felt were most in need of research. There were two write-in requests for research also in the preparation and use of behavioral objectives.

The changes which respondents would like to see made in existing research methods were as follows: experimentation before generalization, giving all elements of curriculum the same attention, decentralization of the supervision system, more contacts with and site visits to advanced countries, allowances of longer periods of time for study of changes prior to their initiation, additional long and short range training for researchers, and focusing on modern methods in education "to apply, evaluate, and get results." One representative from Kuwait felt that there should be a unit which is specifically charged with following-up universal research in the field and giving feedback to various units relating to curriculum development in the Ministry so that personnel would be consistently exposed to what is new. Another respondent felt that there should be an intensive effort to integrate different aspects of knowledge, and that research centers should be more adequately staffed, as soon as possible.

Problems in curriculum development research which were identified were the lack of knowledge of experimental studies in other nations, lack of financing, the need to abandon "the classical and old-fashioned treatment," the need to "create a curriculum which meets the real, practical needs of the country rather than following blindly the Western culture," and the need to bring the ideas of text writers into closer congruence with the ideas of curriculum developers. Again, the problem with lack of inadequately trained teachers was viewed as a heavy constraint on implementation of new curriculum and on the effectiveness of research, particularly in the attempts at management of individual differences. A lack of integration between field workers and the curriculum department was also perceived.

Question IX - B

In the following table, please assign a rank from high to low, indicating the relative importance of each group as participants in the curriculum planning process. Indicate the level at which each group actually participates and the kind of participation involved.

	Rank	Level of Participation	Kind of Participation
1. Central (national) agency concerned with curriculum development			
2. Regional agencies			
3. Principals			
4. Specialized teachers			
5. Parents as citizens			
6. Students			
7. Curriculum planners			
8. University and institute professors			
9. Others (please specify			

Responses to Question IX - B

Of the thirteen people who answered this question, seven ranked the central curriculum development agency as having most importance. Next in rank were curriculum planners (although five people thought planners should be ranked first). University and institute professors were said to have next highest importance, and regional agencies and principals came next. Parents and students were felt to be least important in the curriculum development process.

The level of participation of school principals and specialized teachers was qualified in some cases by statements that these personnel acted merely as complainants and evaluators concerning the curriculum once it was adopted. Regional agencies were said to help establish philosophy and objectives of curriculum and to create new awareness in the schools.

Question IX - C, item 1

The following have been identified as possible loci or "arenas" for curriculum efforts. Please check (✓) the frequency with which each of the following locations are utilized in curriculum development in your country:

	Never	*Sometimes*	*Often*	*Very Often*
a. single classroom				
b. single school				
c. regional agencies				
d. central (national) agency				
e. research centers				
f. curriculum centers				

Responses to Question IX - C, item 1

50 percent of the answers indicated that curriculum centers are "very often" the locus of curriculum change efforts; and a third of the respondents felt that research centers are also "very often" the sites of change. 77.8 percent said that central agencies are either "often" or "very often" the location for curriculum development. A fairly large group (44.4 percent) stated that single classrooms, single schools or regional agencies were "sometimes" involved. Up to 33.3 percent believed that single classrooms and single schools were "never"

the site of curriculum development activities.

Question IX - C, item 2

Please indicate with a check (✓) the groups or persons you think should participate in decision-making in the curriculum development process:

[ ] a. *Experts from the Ministry of Education (central government)*

[ ] b. *Professors who are specialized (universities and institutes)*

[ ] c. *School principals*

[ ] d. *Classroom teachers*

[ ] e. *Teachers' unions*

[ ] f. *Parents as citizens*

[ ] g. *Students*

[ ] h. *Curriculum specialists in schools*

[ ] i. *Curriculum specialists on local and regional levels*

[ ] j. *Others (Please specify.)*

Responses to Question IX - C, item 2

Large percentages felt that all of the groups or persons listed in this question should participate in the curriculum development process. Although teachers' unions and curriculum specialists at local and regional levels were marked least frequently, two-thirds of the respondents felt these groups should be involved. Write-in "others" included thinkers and intellectuals, industrial institutes and educational unions, and researchers in curriculum and school books.

Question IX - C, item 3

Which of the following groups receive training in curriculum development methods before they actually participate in the process? Please check (✓) appropriate answers:

[ ] *a. Principals of schools and local educational administrators*

[ ] *b. Educational planners*

[ ] *c. Educational designers*

[ ] *d. Researchers and evaluators*

[ ] *e. Specialized teachers*

[ ] *f. Media producers*

Responses to Question IX - C, item 3

Percentages of respondents checking each of these answers are as follows: (a) 27.8 percent, (b) 55.6 percent, (c) 55.6 percent, (d) 61.1 percent, (e) 66.7 percent, and (f) 55.6 percent. From these results, it appears that specialized teachers are most likely to recieve special training in curriculum development, and that school principals are least likely to be trained for this purpose.

Question IX - C, item 4

What methods are used to train personnel for curriculum development roles? Please check (✓):

[ ] *a. workshops*

[ ] *b. in-service education*

[ ] *c. life-long education*

[ ] *d. retraining at regular intervals (e.g. every four years)*

[ ] *e. site visitation*

Responses to Question IX - C, item 4

According to this poll, in-service training is the method most often used to prepare curriculum developers for their work, (two-thirds checked this option). Other methods listed are about equally represented in second place. One person wrote a comment that pre-service training was also an important factor.

Question IX - C, item 5

How do you reward the people for their participation in curriculum development projects? Please indicate (✓) answers which apply:

[ ] a. *Possible promotion*

[ ] b. *Increase in salary*

[ ] c. *Extra pay during project period*

[ ] d. *Travel allowances for attending conferences*

[ ] e. *Paying expenses or tuition for training or further education related to the development project*

[ ] f. *Other (Please specify.)*

Responses to Question IX - C, item 5

The most popular way of rewarding curriculum workers, according to responses to this question, is to give travel allowances for attending conferences. Almost as frequent are provisions for extra pay and for paying training expenses. Workers are paid extra if they engage in text writing. During the period of the project, some workers' hours in the school system are reduced to give them more time to concentrate on the curriculum development work.

Question IX - C, items 6a and 6b

a. What are your recommendations for improving the existing situation regarding selection, training and promotion of curriculum development personnel?

b. What do you think are the most important things necessary for the training of curriculum development personnel?

Responses to Question IX - C, items 6a and 6b

One respondent said that only highly specialized, experienced curriculum development personnel (Ph.D's if possible) should be selected, and that every curriculum worker should be re-trained every three years. Promotions would be on the basis of tenure with the unit and degree of scientific achievement. There should be preparations made in advance of their arrival and there should be financial and other reinforcements to keep them professionally satisfied. Such personnel should take part in conferences and be sent abroad on scholarships for further study as it seems necessary or useful. They should be encouraged and rewarded for conducting research.

Elements of training which the respondents thought essential included field practice in curriculum development, training in research and its use, educational psychology, comparative educational studies, knowledge of teaching and evaluation methodologies, knowledge of behavioral objectives and pertinent classroom activities, subject matter competence, and knowledge of educational technology generally. Several spoke in favor of frequent workshops, conferences, and field trips.

Question X - A, B, C and D

A. *Do you have any specific budgetary allocation for the process of curriculum development?*

____

____

B. *How are estimates for such allocations arrived at by financial planners?*

____

____

____

____

C. *What is the process by which curriculum development efforts are financed in your country?*

D. *Out of the total budget of the Ministry of Education, what percentage (approximately) is used for curriculum change and development?*

__________%

Responses to Question X - A, B, C and D

61.1 percent of the curriculum specialists said that they did have a special budgetary allocation for curriculum development activities, and that the amount varied on the basis of past experiences and numbers of projects to be worked on during the year. One leader said that he submitted a budget plan, but that the total amount requested was usually reduced. All units receive their funding from the Ministry, either directly, or in the case of Tunisia, indirectly by way of a budget appropriation to the National Center for Research. Some respondents apparently had no idea what the budgeting process consisted of. Others said there was no separate budget at all for curriculum development. Where percentages were given for such an allocation, they were estimated at from three to eight percent of the total Ministry budget.

* * *

Interpretation

Since most of the items in the questionnaire and the responses to these items are self-explanatory, interpretation given here is minimal. There are some persistent themes which recur, however, and which are worth re-emphasizing both here and in the conclusion of this study.

It appears that, four years after a similar study, cited on page 8, there still exists a considerable gap between what curriculum developers would like to do and what they can actually accomplish. Most report that their units are understaffed and/or inadequately qualified, and that even where curriculum development expertise is at an acceptable level, there are difficulties in communication with higher level Ministry personnel as well as with school administrators and teachers in the field.

Research is largely confined to opinion sampling, and experimental trials of new curriculum in model schools are only beginning to be established here and there in the Arab world. Parents and students have little say in what is taught, although curriculum workers feel that they should have greater input. Teachers and principals react to planned curriculum, but are not normally pro-active in its preparation.

Most curriculum development is still confined to textual revision and preparation of teachers' manuals, with some incorporation of audio-visual aids. Statistical data available to developers is largely confined to numbers of students and teachers and student success rates.

Curriculum specialists are much more likely to see the need for improved teacher training than they are to request training for themselves, although the last few questions in the survey yielded evidence that this situation may be changing.

Examinations are not well-linked with new curriculum, and learning to evaluate programs as well as learning different ways of evaluating students are viewed as a necessity by most respondents. Technical assistance in most aspects of curriculum development is sorely lacking and there are also shortages of technical books and materials.

Curriculum innovation efforts seem to be growing mostly out of new educational policies and the developers' own desires to initiate change, and are proceeding "top-down" from central administrators to the schools. There is a widespread awareness that scientific and technological development of the modern world is mandating curriculum reform in science and mathematics, and that vocational and technical training must assume more prominence.

Among the elements of training which curriculum developers would most like to have or would like their staffs to have are experiences with various learning theories, educational psychology, and knowledge of behavioral objectives and their application. Respondents feel they can upgrade worker skills through scholarships to study abroad, through conferences, and through in-service training workshops.

The 18 persons who responded to the questionnaire seem well aware that education in the Arab world faces a number of important challenges, and that even where curriculum change mechanisms are in place, the lag in change in attitudes of educators generally prevents their optimal use.

Chapter 3

THE CASE OF EGYPT

Since the year 1950, students in Egypt have not had to pay tuition fees at any of the nation's state-supported schools. Free education is available even at the university level. The aim of Egypts' political leadership and educational planners is to provide equal opportunity in education for every citizen. Great strides have been made over the past quarter century toward realizing this aim on behalf of a population of approximately 39 million people.

Though plagued by economic constraints, a traditional emphasis on universities at the expense of universal education at primary and secondary levels, high student-teacher ratios in the classroom, unevenness of educational quality from school to school, and shortages of facilities and equipment, Egypt has nevertheless begun significant curriculum reform. Such reform, based on comprehensive planning methods and scientific evaluation procedures, is viewed as a basic instrument in altering the educational process to meet the challenge of life in the 21st Century.

Responsibilities for the nation's educational system and its processes are largely centralized within the Ministry of Education. Broad national goals for education are seen to reflect Egypt's political, social and economic priorities as well as a humanistic concern for the development of individual student potential. Islamic religion and cultural heritage form the cornerstone of educational philosophy and inform the educational planning process.

As in all Arab countries and most European nations, (e.g., Sweden), the location of educational decision-making within an agency of the central government tends to make educational policies and procedures frankly political in nature and obligatory in implementation. There is, however, a redeeming advantage in such centralization, particularly for small nations. Centralization is facilitative for comprehensive, nationwide planning and it provides the opportunity to produce large scale educational reform on a systematic and carefully controlled basis.

Egypts' sense of relatedness to other nations is a matter of record. One of the charter members of the United Nations, Egypt has also been a vigorous proponent of Arab unity. The United Arab Republic is still a reality in name as well as in the consciousness of Egyptian citizens, despite its brief life as an actual political and administrative federation of three Arab states. Egypt also helped to create the Arab League as early as 1945.

Egypt is one of the first Arab nations to design facilities and programs of study especially for the preparation of curriculum development personnel. The impact of this has been an increasing role for Egyptian curriculum specialists in national educational change and development as well as an ancillary role in providing consultation and training to other Arab nations in the Middle East. Modern scientific and technological approaches to curriculum reorganization and revision seem to have taken root in Egypt and are currently being operationalized in several major projects. One of the forces behind this shift in understanding about the curriculum development process is the realization that, every where in the world, the definition of curriculum has become much broader. It is now typically meant to refer to a variety of educational experiences which a student will encounter during his school years and is no longer confined to the traditional notion of "course of study" or prescribed academic exercises. Another influence which has led to the adoption of more scientific change processes is the impact of various psychological studies and theories of learning. These new definitions and theories in turn have facilitated the development of new planning strategies and educational designs, in Egypt as in every other nation faced with educating its citizens to cope with rapid social change.

Egypt is attempting to overcome a persistent legacy of illiteracy among some sectors of the population by declaring education compulsory between the ages of six and twelve, for the time period normally spent in the primary cycle. This mandate has been difficult to enforce for a variety of reasons, among which are shortages of qualified elementary school teachers, especially in rural areas, and inadequacy of school facilities and equipment. Both problems are directly related to the economy. Trained teachers are often attracted to positions in other Arab nations by higher salary offers. Further, like most nations in the process of implementing compulsory education, Egypt has been forced to confront a series of problems arising from suddenly and vastly increasing school enrollment and also from encountering wider variation in pupil abilities and interests. Such conversions are both complex and expensive, demanding creative solutions.

One of the approaches to large scale reform which Egypt is currently undertaking on a trial basis (and continuously assessing) is the development of integrated education, which combines theoretical and vocational or applied studies within a single experimental school.

The intention is to encourage students to participate in both kinds of studies, rather than to lock them into a single track for the duration of their secondary education. The entire reform, requiring intensive planning, retraining of teachers, and provision of new facilities, as well as development of a comprehensive curriculum model, was designed to be implemented in stages over a period of three years, ending in 1976. The significant effects of this reform and the generalizability of the plan to other schools in Egypt are matters which are still under investigation, but first results are promising.

In addition, the nation's educational planners are in the process of completely recasting their system of junior and senior high school examinations. Moving to the philosophy that testing should serve more than a "sorting" or ranking purpose, Egyptian educators and researchers are designing objective tests to be given during the teaching year, and are providing analysis of results to teachers as usable feedback which can form the basis for changing their instructional methods and enable them to give special attention to children who have been shown to be having problems mastering the material.

These are not the only new projects. The educational reform activity in Egypt in the last decade has assumed breadth as well as depth, so that change is occurring on small fronts as well as large. Examples are recent activities of the National Center for Educational Research on behalf of childhood education, including key participation in several conferences and involvement in publishing of experimental issues of children's magazines. But busy as they are with current projects, the planners are also hard at work imagining the future and devising strategies to be prepared for its arrival.

Financing the Schools

In Table 1, estimated public expenditure for education in Egypt is shown, in pounds, for years from 1965 to 1974. Total expenditures will be seen to have nearly doubled in the nine-year interval, primarily in payment for current or operating expenses of education rather than in capital improvements of educational facilities. However, the latter category of expense had also been increased by 1974 to more than 13,000,000 pounds, a gain of nearly 5,000,000 pounds in capital investment. In 1973, as much as 17.6 percent of all public expenditure was devoted to education, representing 5.8 percent of the gross national product (GNP).

Table 1 : Total Public and Current Expenditure and Capital Expenditure (in thousands); Percentage of GNP; and % of all Public Expenditure : Egypt

year	total expenditure (in pounds)*	current expenditure (amount)	current expenditure (as % of total)	capital expenditure	total as % of GNP	total as % of all public expenditure
1965	110,323	101,765	92.2	8,558	4.8	----
1970	145,030	134,423	92.7	10,607	4.8	14.6
1973	208,910	180,154	86.2	28,756	5.8	17.6
1974	217,317	204,041	93.9	13,276	----	----

Source: UNESCO Statistical Yearbook, UNESCO Paris, 1976, p. 374.

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* The Egyptian pound converts to $1.32, U.S. currency.

The distribution of public expenditure by levels or cycles of schooling is shown in Table 2. Unfortunately, the breakdown of percentages for the primary and pre-school level is not explicit, but it is at least obvious that pre-university education receives the bulk of public funds. This seems to be a reversal of the trend, noted earlier, of concentrating effort and attention on the improvement of higher education.

Table 2 : Estimated Public Expenditure on Education in Egypt (in thousands) and Percentages By Level

year	total in pounds	first level[1]	second level[2]	third level	other types of education[3]	expenditures not allocated by level
1965*	103,797	data	76.9	19.2	data not available	3.9
1970	134,423	included	79.6	20.4	data included elsewhere	----
1973	180,154	elsewhere	72.3	27.7	data not available	----
1974	204,041		70.6	29.4	data not available	----

*Including debt service

1 includes preschool and primary

2 includes general, teacher training

3 includes special education, adult education and similar institutions

Source : UNESCO Statistical Yearbook, UNESCO Paris, 1976, p. 404.

Enrollment

Table 3 indicates the relationship between school enrollments and teaching staff available at each level of education. In 1973, there were approximately 6 million students enrolled at all levels in Egypt, about two thirds of whom were attending primary schools. Because there were only 95,092 teachers for this level, the result was schools crowded with an average of 42 students per classroom, per teacher. Most public schools up to the university level are segregated by sex, and although the table does not show this, it may be inferred that some schools could have markedly higher or lower pupil-teacher ratios, depending on the distribution of the total primary school population by sex in a given district and on the separate abilities of the sex-appropriate schools to absorb over-enrollments. In fact, in some rural schools boys and girls have been placed together in classrooms in order to share the available teaching staff. The resulting coeducation has not posed serious difficulties and has been accepted as a reasonable alternative to denying children access to education for lack of an instructor.

More than twice as many teachers were added to the classroom at the second level of education between 1965 and 1973 as were added to the elementary cycle--11,891 for the second level and 5,894 for the elementary. This is another reminder of the shortage of elementary school teachers in Egypt. It may also signify the anticipation of shortages at the second level, as large elementary school populations complete the cycle and become eligible for higher grades.

At the third level, the table shows that teaching staff has more than doubled in the nine year period. A total of 10,644 teachers were added for the largest percentage gain of any level on the chart.

Table 3 : Number of Pupils and Teaching Staff on the Three Levels of Education in Egypt

Year		no. of pupils	no. of teaching staff	pupil/teacher ratio
Pre-primary education	1965	26,568	758	1:35
	1970	24,558	632	1:39
	1972	31,767	859	1:37
	1973	35,054	895	1:39
First level	1965	3,491,001	89,238	1:39
	1970	3,784,911	99,918	1:38
	1973	3,980,396	95,092	1:42
	1974	4,145,454	103,600	1:40
Second level	1965	1,020,222	50,793	1:20
	1970	1,506,751	59,477	1:25
	1973	1,775,327	62,684	1:28
	1974	1,982,752	--	--
Third level	1965	174,518	7,499	1:23
	1970	233,304	14,250	1:16
	1972	305,653	16,527	1:15
	1973	351,522	18,143	1:19

Source : UNESCO Statistical Yearbook, UNESCO Paris, 1976, pp. 123, 135, 158, 224.

Organizational Structures for Curriculum Change and Development

In Egypt's Ministry of Education, several specialized and permanent units have been created which have direct responsibility for curriculum change processes on a continuous basis. Replacing traditional ad hoc committees, these permanent structures include a research unit, general committees which have policy-making and coordinating roles, and separate units which have primary responsibility for specific levels of education, technical education, and teacher training. Curriculum development specialists are distributed among these units, performing change and development tasks which are related to the particular function of each unit. The chiefs of different departments in the Ministry are involved in curriculum decision-making, as appropriate, at different times in the planning and implementation process. However, large scale projects are guided throughout the period of innovation by a Higher or General Committee representing each major unit within the Ministry as well as the National Center for Educational Research, together with attached experts from other national or international agencies.

Figure 1 illustrates the primary branches in the Ministry as a whole, including the cluster of units which are continuously involved in curriculum initiation or revision. Not shown are a number of subunits which are concerned with such matters as design and preparation of texts and instructional materials, audio-visual aids, and examinations.

There is increasing coordination among all of these units, to make the best possible use of resources to achieve specific goals for educational progress in an integrated, thoroughly considered fashion. The new Curriculum Development Division plays the leading role in this coordination.

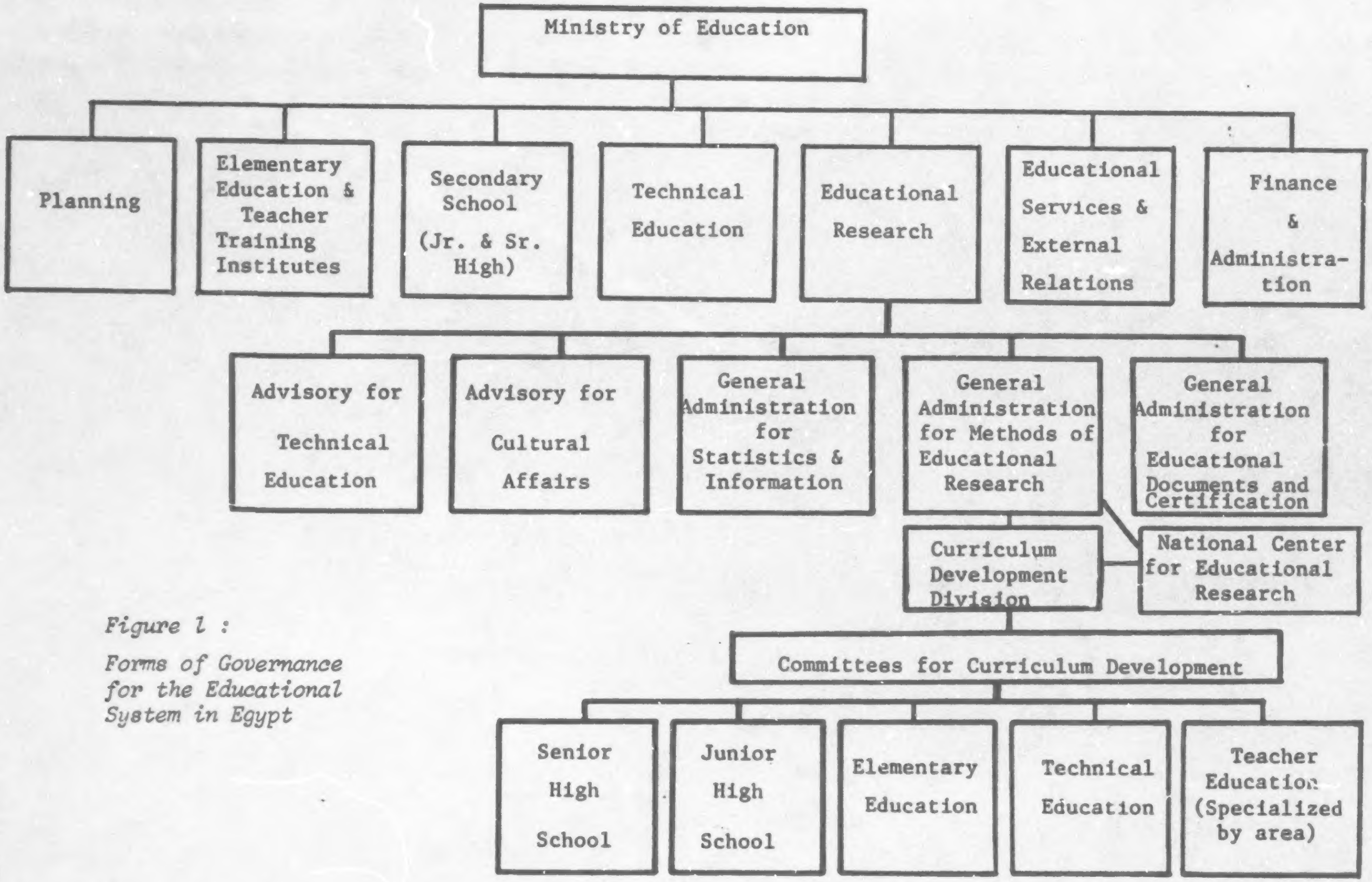
Ministry of Education
Planning
Elementary Education & Teacher Training Institutes
Secondary School (Jr. & Sr. High)
Technical Education
Educational Research
Educational Services & External Relations
Finance & Administration
Advisory for Technical Education
Advisory for Cultural Affairs
General Administration for Statistics & Information
General Administration for Methods of Educational Research
General Administration for Educational Documents and Certification
Curriculum Development Division
National Center for Educational Research
Committees for Curriculum Development
Senior High School
Junior High School
Elementary Education
Technical Education
Teacher Education (Specialized by area)

Figure 1 :

Forms of Governance for the Educational System in Egypt

(Sources : Interviews and Mechanisms for Planning and Administration of Curriculum Development in the Arab World, UNESCO, Beirut, 1974, p. 23.)

Recent Curriculum Development Projects and Achievements

Several modernizations and reorganizations of curriculum have been completed since 1973 or are now in progress, as reported by the National Center for Educational Research. The most significant aspect of these projects is their comprehensiveness and their interrelatedness; Egypt seems to be making plans and moving ahead on a number of educational fronts simultaneously. Chronologically, the first effort was directed toward review of the general education curriculum in all subjects, at all levels, to bring contents and methodologies into alignment with national priorities and modern realities.

1. *The Project for Comprehensive Curriculum Review and Reform*

Egypts' educational planners undertook the task of broad curriculum revision in 1973 on the basis of several critical assumptions. From the first, curriculum was identified as an open and inclusive concept, including specifications of what to study, what texts and teaching aids should be prepared and used, how to evaluate student learning and personal growth, and even how to assess and improve student, teacher and administrator interactions. Education was viewed as a dynamic process, a way to change behaviors and attitudes in positive directions. Further, planning personnel envisioned education as providing a group of experiences which should promote individual creativity, as well as good citizenship.

The credo was specifically stated that change in the modern world in general and in Egyptian society in particular must be openly responded to through change in education. The tools of science and technology were viewed as central to the process of initiating and controlling change in the preferred directions, so that cultural and spiritual values of the country might be preserved within each change. The aim in the use of such tools would be also to accelerate the rate of change in education to keep pace with social and economic demands.

Several other principles were laid down to guide curriculum development personnel in their approach to specific alterations in subject matter curricula as follows:

1. Proposed changes must have a scientific basis; i.e., they must be founded on knowledge of student characteristics at each level and also on the best psychological and educational information available about how people learn. A variety of research methods should be employed to provide necessary data for good decision-making throughout the change process.
2. There should be careful attention to the creation of a balance between the general and technical or vocational studies of each student, in every educational situation, bearing in mind the holistic nature of human intelligence and personality.
3. Great care should be taken to insure both horizontal and vertical integration among subjects, to provide the students with coherent academic programs both within a given grade level and throughout the entire course of formal education.
4. A variety of points of view from different sectors of the society should be sampled and taken into consideration. These views should be gathered from subject matter

professors and professors of education, from Egyptian philosophers, from students and parents, and from faculty and administrators in the field.

5. Changes should be planned in sequential steps, with specified time estimates, and should be implemented on a large scale only after an appropriate period of trial and evaluation has demonstrated the feasibility and usefulness of each change.

The concept of curricular integration along horizontal and vertical axes is an important one. *Vertical integration* refers to the sequencing of subject matters from pre-school through the end of a student's educational experience, in such a way that the student is introduced to a wide array of concepts and disciplines in the lower grades and explores them in increasingly greater depth as he progresses through school. A particular merit of this approach is that it also avoids unnecessary repetition. The relationships of curricula in the vertical dimension are geared to stages of student maturity. *Horizontal integration* is based on the relatedness or complementarity of subjects within a given grade level. There is specific attention given to the development of skills which transfer from one subject to another, e.g., the learning of terminology in one subject which becomes the focus of a spelling lesson in another, or the use of mathematics in science education. Egypt's focus on these two dimensions is evidence of an interest in and commitment to development of what has been called the "comprehensive" school, a model which is familiar in both Sweden and the United States and which many nations in Europe, the Middle East and other parts of the world seem to be moving toward.

The proposed nationwide curriculum revision was viewed as requiring three preliminary steps : (1) the specification of general objectives for modern Egyptian society, at all levels of schooling, (2) the addition of new subjects designed to enable the student to understand and seek solutions to current social problems, and (3) the provision for both professional and public discussion of the issues involved in the proposed changes.

To facilitate discussion and elicit public confidence and cooperation, the Ministry of Education first sought to initiate a major conference, inviting 400 experts from among philosophers, educators, educational technologists, researchers, university and teachers' college faculties, teachers' unions, and similar groups. These experts were asked to study the data indicating the necessity for change and to make recommendations concerning possible revisions in the tentative plans for curriculum development. Explanations were given and recommendations were sought concerning new texts needed as well as concerning proposed revisions of existing texts. A time frame of three years was established for the completion of textbook revisions and new texts, beginning in the academic year 1975-76. Text writers were charged with the responsibility to make the new materials relevant to the modern world by addressing both long-range and immediate social problems. As a result of the conference, a special group or Higher Committee was formed to oversee the work of preparing texts and teachers' manuals which would fulfill the planners' specifications for horizontal and vertical integration.

A series of further recommendations from the conference asked that attention be given to differing cognitive styles of the students, as well as to their personal values, needs and interests. It followed logically that several new dimensions would need to be introduced in teacher education programs.

It was proposed that the "unfreezing" of student options to permit them to cross over easily between the humanities and scientific subjects should at first be limited to one high school grade level, and that evaluation of the limited innovation should be made before further generalization.

Topics which conference participants thought should be incorporated in modern Egyptian curriculum ranged over a broad front and included population and family education, energy and environmental studies, modernization of agriculture, understanding of the space age and satellite technology, Arab unity, world peace, and other pertinent issues in the public domain.

After the 1975 conference, the Higher Committee worked intensively to reevaluate the contents of the new curriculum and arrange it to meet the twin objectives of modernization and integration. By the end of 1976, most of the curriculum plans had been approved and schedules for complete implementation specified. This general committee set standards for texts and demanded that writers work cooperatively with the Institute for School Books. Some texts have been updated with added sections, but new books have been written in the social sciences, cultural history and comparative study of Christian religion.

That the study and analysis of Egypts' curricular system and retooling for planned change took place over three full years is evidence both of the scope of the project and of the seriousness with which it was undertaken.

The description of characteristics of the new curriculum, as summarized by the National Center for Educational Research, is detailed and highly specific, subject by subject. It serves the purposes of this case study, however, to highlight some important principles and to cite a few examples of how they have been applied.

Language studies have, in general, been vitalized by a new emphasis on active practice of many different kinds of language skills, e.g. oral and silent reading, conversation, literature appreciation, grammar and written exercises. Rote learning is viewed as incapable as a major strategy for producing facility in conversation or significant understanding of a foreign language. Students in English or French are encouraged to take notes in the foreign language they are studying, as a way of increasing comprehension, ability to summarize, and speed. Senior high school foreign language courses are designed to reinforce the spectrum of skills acquired in junior high school and enumerated above, through additional practice. Student readings of foreign language literature are scheduled for presentation in three degrees of difficulty, starting with simplified and abridged versions in the first grade of senior high school. In the second year, students still receive abridged works, but during the third year they will read original novels and other literature. In all senior high school grades, extra readings are recommended in a variety of literary genre. Students are expected to master materials and to perform in foreign languages at the standard required in the intensive or special high schools.

The dimensions of the new geography curriculum are explicit and include an emphasis on the practical value and application of what is learned. In the elementary grades this takes the form of observation of the environment and reporting the data collected in pictorial, written or oral form. In junior high school, astronomy is introduced along with environmental studies. When high school grades are reached, geography study shifts focus toward local and national environments and to the environment of the collective Arab nations. Other dimensions are the study of contours, use of the Atlas, and world problems and concepts such as overpopulation and social effects, conservation of resources, food supply, etc.

History, philosophy, economics, sociology and psychology are similarly reoriented toward an understanding of contemporary Egyptian and other Arab societies in the context of each particular discipline. History, in particular, is less poetically described, and in dynamic language made more pertinent to and continuous with modern scientific, political and social events. The curriculum of philosophy at special intensive standards is completely new and is meant to play a basic role in the sensitization of students to three higher moral values: the right, the known, and the good. It is felt that such a course of study is especially important in these materialistic times and that these values, which lead to aesthetic appreciation as well as moral character, cannot be dealt with most effectively as aspects of other subjects.

Science subjects are practically oriented but are also holistically integrated in concept, with the deliberate intention of interesting students and raising their awareness of the role of science in the vocations. The aim of the science program is also to furnish students with basic skills and knowledge needed for application of scientific thinking to problems of modern life. Studies in science, as in all other subject matters, are interrelated both horizontally and vertically in the new conceptualization of content and materials.

It must be recognized that the revitalizing, reorganizing and integrating of all of the content of all of the subject matters in three levels of education in Egypt has been an enormous but also a critically important task. The curriculum specialists have realized that there comes a time in education as in other pursuits when simply "adding on" or readjusting a little here or there no longer meets the pressing needs of individuals or of society. In such instances, radical changes are demanded and radical measures must be taken, for further human progress depends on such change and development.

2. *The Project for the Evolution of Integrated Schools*

With Ministry leadership firmly committed in favor of a more holistic approach to the teaching/learning process, academic planners began to devise means to remove the traditional separations between scientific, vocational, artistic and humanistic studies at the post-elementary levels.

In May, 1975, the Ministry initiated a conference for the purpose of considering the directions and forms such curriculum integration should take. Participants were designated representatives of the Association for Educational, Scientific and Technological Research, the Public Union and the High Institute of Educational Colleges and Universities, the national branch of UNESCO and also the Regional Office, some departments of the Ministry, and the National Institute for Educational Research. Conferees were asked to develop an outline specifying what Egyptian secondary school education should be like and how to change the existing system to conform to that outline.

After a period of field study, school visitations, and examination of how systems of comprehensive education have been instituted elsewhere, the project participants developed a philosophy and rationale for movement toward comprehensive (integrated) schools and formulated specific recommendations for both process and planned outcomes. There were three major considerations which conferees felt should shape the nature of their work: (1) the need to break down the barriers between different parts of the national environment and between different age groups so that high school adolescents would not be isolated from society, and the need also to provide equal opportunities for all segments of the population to participate democratically in Egyptian society, (2) the need to overcome the traditional separations between theory and application, values and behaviors, consuming and producing, and to break down even the imagined barriers between learning and life, and (3) the need to change the traditional understanding of education as separate from the work world, so that it might instead be viewed as a means to provide the Egyptian society with skilled, productive workers and with new attitudes about the relationships of education and work.

In light of these considerations, the conference specified these desired outcomes:

1. Students should be viewed holistically, as participants in both school and society.
2. Schools should be relevant to the work life of the communities they serve and should encourage preparation for and involvement of students in that work life. Students should be afforded the opportunity to work outside of

school in various kinds of job settings. The goal is to utilize schools and their environments as laboratories for interrelating the objectives of each as well as for identifying the common objectives of both "worlds."

3. Secondary schools should be more flexible in accepting students, regardless of standings on the entrance examinations. Although general competency of students should have reached at least the sixth grade level, standard academic competence alone is not a fair or sufficient criteria for acceptance. Other personal accomplishments should be taken into account.
4. Students from the ages of 12 to 20 should be made eligible to enter the new comprehensive schools, so that junior and senior high school levels might truly operate as a flexible educational continuum for all the nation's youth.
5. Cultural, scientific and applied subjects should be open to all students according to interests and abilities as part of their individually planned programs for college entrance or entrance to the vocations. There should be more emphasis on commercial education, as well.
6. Students should be able to proceed at their own rates and even to take leaves of absence, as long as they return to their studies and complete them before the upper age limit of 20 years..
7. Educational administration should also be recast in light of modern theory and practice. Staff inputs should be

sought and utilized to help make decisions which improve all parts of the system and which are generally felt to be needed. Decentralization of some types of decision-making from the national level to the school level is, of course, a prior condition.

8. Schools should seek to diversify their budget sources, eliciting support not only from government funding but also from local communities and from various potential sources of outside funding, in order to extend existing school facilities and programs as rapidly as possible. This would also serve to enlarge the area of public participation and make new energy available to schools.
9. The role of the teacher should be re-evaluated and new understandings of this role should be translated into new dimensions in teacher training.
10. Generalization of the concepts and strategies of open schools should proceed, on the basis of results of small-scale experiments already completed.

The processes identified for accomplishing these comprehensive goals are complex, but they fall basically into three categories: (1) improving of the strategies and mechanisms for change, (2) specifying steps in the change process, and (3) relating proposed changes to community and national environments.

In the first category, recommendations were made that the Ministry should utilize appropriate foreign consultants and specialists' help to organize and oversee the first years of the proposed change-over toward the integrated school model of education. Budgeting units should be asked to enlist a variety of regional organizations in financing a pilot project, relevant to identified local needs. Realistically, they must seek to strike an optimum balance between desired levels of funding and what funds might be actually available for the project. Staff development, facilities and equipment, and payments to foreign consultants must be taken into account in the budgeting process.

Other aspects of creating new mechanisms for change were the seeking of agreements with friendly nations for equipment acquisition and for development of scholarship and visitation programs, to familiarize Egyptian educators with integrated school systems and methods in other countries. Also, although efforts to modernize equipment and materials in existing schools should not be neglected, these efforts should be consonant with the projected change-over of all Egyptian post-elementary schools to the comprehensive pattern in the near future. Although preparatory or junior high systems would be first to experience the planned reorganization, with complete change over projected by 1985, secondary schools would not be far behind. The change strategy should therefore be to accomodate both systems in one master plan. Another significant aspect of the development of change mechanisms would be frank recognition at the outset that what is intended is a massive, national reform which would require the change also of testing practices and school admissions. Above all, the strategists must seek the understanding and cooperation of the public and of the full range of educational agencies. A particularly necessary factor would be the commitment of universities to accept students with diversified, comprehensive school backgrounds.

The implementation steps specified in the second category are not necessarily linear, one after another. Several preparatory activities were conceived of as proceeding simultaneously. It was proposed that the new system should be implemented in one school only, as an extended field trial or pilot program. This site of this new school should be carefully chosen from among several newly developing communities, and progressive leadership should be chosen to administer the new school programs. The length of the school day would be extended. The age level of students to be accepted would be 12 to 18 years. It was recommended that three separate committees should be formed to (1) study the subject of existing core offerings at the junior high school level and determine the transitional elements which could serve to bridge between this preparatory level and the first year of high school, (2) study the possibilities for coordinating different schools in one geographical area to produce an integrated continuum, and (3) conduct trial runs for teachers, giving them practice in using the comprehensive approach, both in and outside of school settings. The work of these committees was envisioned as providing substantive data concerning the project and as identifying further steps relevant to its accomplishment.

The conference participants realized that change-over would be most easily accomplished in the 160 schools identified (at the elementary level) as already having instituted course work in vocational or applied studies, and these schools were specified as targets for the first series of generalizations and transformations subsequent to the period of trial in the experimental school or schools. Geographical considerations suggested the development of at least one exemplary school per region, during the first six years. Reshaping of the secondary school programs would begin with the first grade at that level, and the possibility of detaching that first grade and adding it to the end of the old preparatory cycle was considered. Proponents of this suggestion felt that the rearrangement would provide a continuum of ten years of basic education, discrete from secondary education and providing a richer terminal sequence for those students who do not go on to high school.

It was also recognized that training of teachers to work effectively in the new integrated system must be planned and executed, and new teachers added as necessary. Academic and career guidance would obviously assume greater importance, once students had the flexibility of choosing from among both academic and vocational or applied fields (and even from among different schools, in a horizontal search for appropriate subjects). School personnel would need to be developed to provide such guidance. Advisors and other teachers would themselves need to be convinced of the equality of the vocational and academic tracks as preparation for useful and productive lives in Egyptian society.

The role of school administrators would change also, in the direction of accountability for promoting and implementing the new philosophy of comprehensive education in each school. Administrators would need to report annually what progress had been made in the change-over, what remained to be done, and what resources were needed to do it.

In the third dimension or category, the development of school relationships with the community and with the national environment, planners were concerned with both the integration of national values, cultural history and goals in the revised comprehensive school curriculum and with actual geographical proximities to various kinds of vocational settings. Opening the schools to the environment and raising the level of input from the community to the schools was foreseen as a necessary step in the development of a new consciousness about the dignity and value of work-preparatory school programs as well as in the development of actual work experiences for vocationally inclined students. Since the environments of schools would differ geographically, regional integrated schools would be expected to offer vocational subjects most useful to the particular economy of that region, whether in the directions of agriculture, industry, marketing, marine, desert, or urban occupations. Students should be allowed and encouraged to transfer from schools which did not offer their chosen specializations to schools nearby which were teaching that particular vocational area.

Environments were presumed also to be a source of enrichment for out-of-school activities and clubs, which might be recreational as well as informative and illustrative of various kinds of interests or hobbies. Communities could benefit, in exchange, from accessibility to school resources. The possibilities of various kinds of adult education were discussed in this connection.

The abridged version of the accomplishments of the conference which has been presented above does not begin to exhaust the detail and depth of the participants' deliberations. It does, however, serve to highlight the comprehensiveness of the process of curriculum change in Egypt, which obviously is taking a form much more complex and far-reaching than revision of subject content and presentation methodologies. The progression of national curricular reform toward significantly modified educational facilities, processes and expectations can be seen even more distinctly in the discussion of a culminating effect

-- the Nasr City experimental school project.

The First Experimental Integrated School at Nasr City

In August, 1972, the Ministry of Education issued a mandate for the establishment of the first integrated or comprehensive school in the Cairo area. The Nasr City location was chosen in part because it was a new school, in a newly settled area, and was considered open to the goals and processes of innovation. The school was planned and built with the cooperation of West Germany, and it represented a first step in the chain of processes leading to national reform of the system of basic, compulsory education in Egypt. According to purpose, it was expected to: (1) serve as an exemplum of the conversion of combined elementary and preparatory school cycles from the 6 + 3 pattern to an integrated 8-year continuum, and (2) demonstrate the value and effectiveness of combining college entrance or "theoretical" subjects and vocational education or "applied" subjects and workshop experiences within the setting of a single school. The philosophical rationale for this change-over on an experimental basis developed over a period of several years, as indicated earlier in this case study. But the school actually began implementation of the curriculum reform and integration project in the school year 1972-73, at first with just three classes in the first and fifth grades. Change-over was completed during 1975-76.

The normal population of the Nasr City school is 840 students. Students are admitted at age six, and annually a new group of 105 students (three classes of 35 each) is enrolled. No students may transfer into the school from other schools because of the differences in curriculum. Students may transfer to regular elementary or junior high schools at the equivalent grade levels, however, except in the case of eighth graders. The latter must transfer to the final (9th) year of junior high school, since he is in his terminal grade in the integrated school system.

The school is a modern, cooperative coeducational school for boys and girls. It is a free public school, operating under the laws pertaining to all public schools. Students attend for the whole day and are engaged in full time study, with the midday meal provided by the school. The school is identified as polytechnical rather than vocational. Its integrated program has theoretical and technical or applied studies (such as manual arts) standing in complementary relationships to each other throughout the eight-year sequence. Elementary and preparatory levels are incorporated in this sequence.

The students are encouraged to be interacctive with their environment, practicing democracy in both curricular and extra-curricular activities. School philosophy requires that students shall be encouraged to learn self-control and leadership skills. The social role of the school is explicit and representative of the new sort of training for Egyptian citizenship in the modern world which the nation's curriculum development planners have specified.

It is of course intended that, on completion of eight years at this school, students will be adequately prepared to enter their choice of general education, vocational, or teacher training high schools, and will have had opportunities for field work after their basic instruction in applied studies. There is an emphasis in the Nasr City school on preparation in science, geometry and second languages (German and English). Physical education is required. For the most part, it shares the curriculum of regular elementary and preparatory public schools, with the addition of the following:

1. Modern geometry and its applications
2. Elementary environmental studies, including health, science, and social science, national education, and attitudes
3. Science curriculum taught as individual subjects (see Table 4), with higher standards than are required in the regular junior high or preparatory level
4. Polytechnical subjects (manual arts). First grades work primarily in paper, clay and wood. Third and fourth grades may also work with plastics and fifth grades are introduced to metal work. Grade six may use a variety of materials, and operate machine tools. Also, in grades four through six, students may be involved in preparation of soil, planting and cultivating of agricultural products. Agricultural studies are related to biology and geography lessons. Home economics is important and required of all students, both boys and girls, from grades five through seven. Boys are not required to continue home economics in the eighth year, however.
5. Physical education
6. Music, including music appreciation, basic theory, songs and poetry, different instruments, and orchestra (all grades)
7. German language, grades seven and eight. Students learn practical terminology, names of tools, instructions for

Table 4: Distribution of Classroom Hours By Subject and Grade, Nasr City Integrated Experimental School

subjects	grades 1	2	3	4	5	6	7	8	total hrs.
Religion	3	3	3	3	3	2	2	2	21
Arabic language	12	11	11	10	6	6	6	6	72
English language						5	5	5	15
German language							3+	3+	6+
Geography, history, social studies					3	3	3	3	12
I. Cultural Studies Totals	15	14	14	13	16	16	16+3	16+3	120+6
Environmental studies	1	3	4	4					12
Mathematics	5	6	6	6	6	6	6	6	47
Biology					2	2	2	2	8
Physics						3	3	3	9
Chemistry							3	3	6
II. Scientific Studies Totals	6	9	10	10	8	11	14	14	82
Polytechnical subjects	2	2	2	3	3	3	3	4	21
Home economics					2	2	2	2+	6+2
III. Vocational Studies Totals	2	2	2	3	5	5	5	3+2	27+2
Art	1	1	1	1	1	1	1	1	8
Music	1	1	1	1	1	1	1	1	8
Physical Education	2	2	2	2	2	2	2	2	16
IV. Aesthetic & Physical Educ.	4	4	4	4	4	4	4	4	32
Total hours required, each level	27	29	30	30	33	36	39+3	37+5	261+8

+ not required. Source: Directory of the Integrated Experimental School in Nasr City. Ministry of Education brochure, Cairo, 1978, p. 14.

their use, technical manuals, etc.

Table 4 shows the distribution of hours each Nasr City student spends in each grade, in each subject, plus the total number of hours he will accumulate, by subject, over the eight year period. In the column for totals, it may be seen that the hours are most heavily weighted toward Arabic language and mathematics. Subjects are clustered in four categories: I. Cultural Studies; II. Scientific Studies; III. Vocational Studies; and IV. Aesthetic and Physical Education.

The percentage of hours devoted to each of these categories or clusters are expressed in Table 5, where it becomes clear that cultural and scientific studies are about evenly balanced, as are vocational and aesthetic/physical education. Polytechnical/vocational studies increase in importance, from 7.4 percent of total school time for a first grader to 12.8 percent for an eighth grade student.

Another finding from Table 5 is that, as cultural studies decline in total percentage of time spent on them from first grade to seventh and eighth, scientific hours increase. The obvious conclusion when the data from this table is combined with data in Table 4 is that Arabic language and religious studies are most heavily concentrated in the first four grades. Though second languages are added from sixth grade on; and geography, history and social studies are required from fifth grade on, these do not balance off the earlier accumulation of Arabic studies. Mathematics hours remain nearly constant from grade to grade, but the addition of biology in the fifth grade, physics in the sixth, and chemistry in the seventh and eigth shift the percentages of time spent in scientific studies toward the higher grades. Vocational, aesthetic and physical education account for only about one-fifth of total hours in class.

Table 5: Percentages of Time Spent in Each Major Subject Grouping By Grade, Nasr City Integrated School

subject grouping	grades							
	1	2	3	4	5	6	7	8
Cultural Studies	55.5	48.3	46.6	43.3	48.5	43.3	40.0	41.1
Scientific Studies	22.3	31.0	33.3	33.3	24.2	29.7	35.0	35.9
Vocational Studies	7.4	6.9	6.7	10.0	15.1	16.2	15.0	12.8
Aesthetic & Physical Ed.	14.8	13.8	13.4	13.4	12.2	10.8	10.0	10.2

Source: Directory of the Integrated Experimental School in Nasr City, Ministry of Education brochure, Cairo, 1978, p. 17.

Examinations and Other Assessments

In accordance with guidelines established as early as 1971, the experimental school is conscientiously relating student achievement and other testing to the specified school objectives. The milieu of the Nasr City school, in this regard as in all others, was intended as a setting in which new methods of student evaluation could be devised and tested, for later generalization to other schools. But evaluation procedures must also take into account the unique nature of the school itself.

In general, the rules governing development of examinations at Nasr City are as follows:

1. All subjects are considered "basic" and of equal value. All must be evaluated in some manner.
2. The developmental maturity of students must be remembered during test constructions, whether these are cognitive, skill performance, or art appreciation tests.
3. Elective subjects will be tested at the level of the same subjects in intensive schools.

4. Because there are a total of 19 subjects, different modes of testing (written, oral or performance) may be used. Integrated tests may also be constructed, covering two or more closely related subjects. No student will be asked to write more than eight examinations or take more than four other tests in applied subjects.
5. Examinations will be made similar to tests in the same subjects in equivalent grade levels in regular schools.
6. Examinations will be based on 100 percentage points.
7. Physical education examinations are first in order of administering. Vocational and manual arts tests will follow academic tests, so that students may concentrate on written examinations first.
8. Examination preparers are foreign experts in subject areas that are completely new, or translators, or persons who have already implemented such examinations elsewhere. All of these writers are, however, subject to test guidelines established by the school.
9. In the case of subjects taught as one unit, e.g. physics, chemistry and biology, the student will be tested in the subject of his choice only. He will receive his years' average as a grade in the other subject(s).

The first school examinations were prepared by a committee composed of the General Director for Educational Administration in Heliopolis, the General Director for Junior High Schools, the Chief of the Experimental Unit of the National Center for Educational Research, the Chief of the German experts, and a representative of the General Administration for Examinations. Upon completion of their work, the tests were submitted to school leadership for review before they were administered to the students.

Table 6 indicates the type of examination developed for each subject as well as the typical number of hours in the experimental compared to the regular schools in that subject.

Final examinations contribute only 30 percent of the student's year-end grade. Throughout the year, the student is evaluated continuously and formatively, in written, oral, and manual arts dimensions. Results of these ongoing evaluations are recorded monthly by teachers

Table 6: Comparison of Scheduled Hours and Types of Examinations, Regular and Experimental Schools, Final Year

	regular school	experimental school		
subject	# of hrs. per wk.	# of hrs. per wk.	type of exam.	% of hrs.
Arabic language	6	6	*	41.1
Religious education	2	2	*	
1st foreign language	6.5	5	*	
2nd foreign language	---	3+	*	
Geography	2	3	**	
History			**	
National education	1		*	
Physics	4	3	**	
Chemistry		3		35.9
Biology		2		
Geometry	4	6	*	
Drawing	2	1	X	
Music	1	1		10.2
Physical education	2	2	X	
Home economics	---	2+	X	
Polytechnical subjects	---	3	X	12.8
Totals	22-23	boys 37-40 girls 39-42		

* written exam
** written exam, but choice of one
+ elective
X vocational examination
Source: Projects and Achievements for Educational Research, 1975-76, National Center for Educational Research, Cairo 1977, p. 82.

and contribute 70 percent of the final numerical grade. Written explanations accompany the summary the student receives at the end of the year.

Promotions from one grade level to another are assured if a student gets a final grade of at least 40 percentage points in every subject (50 in polytechnical subjects), on the basis of his averaged monthly grades and final examination, if any. If a student fails to achieve the grade of 40 in one subject, he is promoted provisionally. Failure in two subjects means repeating the grade. If a student fails two years in succession, he must transfer to another school. A final examination is given at the end of the eighth year. Students who successfully complete this examination receive a certificate equivalent to the preparatory, or junior high, certificate.

The word *nasr* means success, in Arabic, and the experimental school bearing this name has lived up to expectations. No Nasr City graduate has yet failed the national standard examination. In a regional contest for "best student," a Nasr student was the winner, and other students have also won competitions of various kinds.

It may be that the practice of transferring students who fail two grades successively has contributed to the rate of success Nasr has had with its graduating class, but even if this is the case, the experimental school can stand on its own merit as an exemplum of integrated education. The combination of arts, sciences, humanities and manual arts has not been detrimental to the students, and has in fact broadened their basic education and brought into closer balance their mental and physical activities. The Ministry considers the Nasr City school a successful step in the direction of national educational reform.

Though some of the developmental activity leading to the creation, staffing, and program plan of the Nasr facility has been indicated earlier, it should again be emphasized that the experimental school project has at all times remained under coordinating supervision and active support of the General Committee, which has included Ministry personnel, other experts, and researchers from the National Center for Educational Research. The director of the research center is chief of this committee. Deputy ministers and agency directors from the Ministry are as follows: Deputy Minister of Elementary Education and Teacher Training Institutes, Deputy Minister of Secondary School Education, Deputy Minister for Finance and Administration, Deputy Minister at the level of the Cairo region, General Director for Junior High Schools, and General Director for Elementary Education. Committee members at the school level are the Director of Administration in the school, the chief German expert as in-house consultant, and the Principal of the school. The committee also includes the chief of the experimental unit of the National Center for Educational Research, as record keeper.

The group is responsible for general school policy and budget, criteria for faculty eligibility, as well as hiring itself; and, in general, scientific management of the project in all its aspects. They have conceived a plan for annual inservice training, using experts from Germany in polytechnical subjects, science, and geometry, in cooperation with local teachers. In addition, all new teachers will be involved in a two-week orientation to the new school, its philosophy and operation, before beginning their teaching assignments.

Within the school, there is also an administrative board composed of the principal and assistant principals, first level teachers and German teachers, and other representatives. Members share responsibility and assignments, including formative evaluation tasks, parent conferences, and Student League liason,as in regular schools.

Project Research

The research aspect of the Nasr City experimental school project is multi-dimensional. As a control, researchers have evaluated three regular elementary and junior high schools: one in the same kind of suburban environment, one in the middle of the city of Cairo, and one in an agricultural environment. The same measures and evaluation processes have been applied to all four groups, to permit statistical comparison.

The seven dimensions which have been the concern of researchers are listed below. Notation is made also of the groups or agencies which have had primary responsibility for carrying out the necessary research in each dimension:

1. *Evaluation of Curriculum* - including written curriculum, texts, teachers' manuals, extra-curricular activities, teaching methodology, media resources and equipment, and laboratory equipment. The research group had the responsibility for specifying objectives in every subject and in every grade and explaining how these objectives were applicable, as well as how they were related to school, community and national goals. They also specified standards for each grade level and suggested resources for instructional enrichment (Permanent Committee for Curriculum and School Program).

2. *Evaluation of Students* - including comprehensive assessment of physical and personal growth, skill development, and cognitive

strengths as well as measurement of achievement at grade level; testing also of mathematics and reading comprehension; silent and oral reading skills; scientific, historical, geographical and environmental awareness; aptitudes; problem-solving; ability to produce examples; ability to use equipment; legibility of handwriting; attitudes; and etc. (Permanent Committee for Evaluation and Tests, with other personnel as needed).

3. *Evaluation of Teachers* - including specification of skills and levels of educational preparation needed, in-service training needed to teach in an integrated school setting, evaluation (qualitative and quantitative) of teaching performance in a classroom setting, suggestions for attracting good teachers to the experimental school, and evaluating teacher supervision structures and relationships in the hierarchy from national to local levels (Permanent Committee for Teachers and Educational Leaders with other personnel as needed).

4. *Evaluation of Administration and School Regulation* - including assessment of relationships at many levels, i.e: between school and the National Center for Educational Research, between school and the Bureau of National Statistics, between school and local government, etc. Also responsible for evaluating in-school administrative arrangements and relations of the administrator with teachers, with parents and with the Student League (Permanent Committee for Direction and Regulation of the Schools).

5. *Evaluation of Budgetary Matters* - including projections for an ideal budget, assessment of what funds are available and from what sources (e.g., independent funding, funds from other institutions), investigation of ways in which the school might itself generate funds,

and examination of fringe benefits for faculty and other employees (Permanent Center, Finance and Administration, with other personnel as needed).

6. *Evaluation of School Building* - including evaluation of existing school building, projections for an ideal building and cost estimates for it, realistic revision of cost estimates, consideration of buildings already available in the environment as potential sites of the new school, assessment of ecological relations between the school and the environment (Permanent Committee for School Housing).

7. *Evaluation of Relationship Between School and Environment* - including planning how to achieve good relationships subtly and without imposing on either; arrangement for activities of mutual benefit (Temporary Committee, consisting of representatives from the elementary and junior high school committees, social educators, National Center for Educational Research, the school itself, and the school environment).

Some of the direct objectives of these agencies and committees were closely related to the principles of group process, i.e. how to establish working groups that can cooperate and achieve tasks successfully in specified time frames. Other benefits were expected from exposure of large numbers of people to modern research procedures and the determination of generalizable findings. The preparation of a battery of appropriate evaluation tools and instruments was itself a scientific undertaking involving many participants. It was also hoped that new techniques of supervision and guidance of teaching staff would be an indirect outcome of the total evaluation process.

The evaluation and interpretation process concerning the Nasr

City experimental integrated school is by no means concluded. Long range assessment is planned, to discover how well the new system achieves objectives over time and to test the reliability and validity of the evaluation methods and instruments themselves. Nevertheless, results thus far indicate that Nasr City students are profiting from their experiences.

Project for Development of Examination Systems

Egypt, like other countries which have traditionally utilized examinations solely as a means of final accreditation of a students' school performance, is moving rapidly toward a system of formative evaluation and criterion-referenced testing. The scientific development of this new approach is based on behavioral research, demonstrating that testing depends much less on chance and is most valid if it is related specifically to stated learning objectives and specified criteria of performance. Under these conditions, educators are able to make much more objective decisions about how well the student has achieved the stated objectives and what kinds of additional learning experience he needs, if any, in order to meet the desired achievement level.

Objective testing of this sort depends on the careful analysis of what is to be taught, in what sequence, and with what expected outcomes. Test preparers take the whole content of each course into account, arrange major concepts and skills in hierarchies, so that more difficult work is built on easier, and select appropriate ways to test each important element. When the resulting questions or other performance measures are used throughout the year to diagnose a student's problems with course content and to plan ways to help him achieve the necessary level of performance, the process is called formative evaluation.

Recognizing that terminal examinations do not perform this diagnostic function in time to be of any help to the teacher or the student, Egypts' educational planners have directed their attention to the development of formative evaluation at several earlier points in the course of a school year.

The target group selected for experimental use of these new kinds of tests and testing procedures was the first grade of the general high school. Two schools were originally designated as sites for formative evaluation in three subjects, e.g., geometry, chemistry and history, during January, 1976. The plan called for generalizing tests in one subject to other schools in the school year 1976-1977, and for generalizing examinations in all three subjects in three time intervals (November, January and March) during 1977-78. The timetable, as finally determined and expressed in greater detail, is shown in Table 7.

Establishing basic outlines and providing continuing guidance for this project has been the responsibility of the National Center for Educational Research. Members of its staff presented the rationale for change in examinations, explained the process of content analysis of subject matter curricula, and prepared examples of objective test questions with the help of curriculum work groups which included teachers and subject matter specialists. Criteria for questions were that each should measure one skill, that it should test an important element of the curriculum, that questions should be sequential with each other, and that each question should be suitable for inclusion

Table 7 : Timetable for the Development of New Examination Systems in Egypt

steps	projected accomplishments during time period	Center personnel responsible	time period (1976)
1	project proposal delivered to experts in Center for study and evaluation	all members of the specialist group	Jan. 3-10
	general conference convened for discussion and explanation		Jan. 10
2	analysis begun of content of curriculum and texts for first grade of high school, starting with the first subjects for first half of the year	curriculum working groups	Jan. 10-24
	problems of application discussed		
3	objective examples of questions from the curriculum formulated	working groups	Jan. 24-31
4	test copy books prepared for the basic subjects	working groups	Feb. 1-3
5	construction of each test and key for grading completed	working groups	Feb. 3-5
	instructions prepared for use of test copy books and tests		Feb. 7-12
	decision made regarding size of sample (no. of classes to be used for field trial of tests)	special group	
6	training of members of the Center to apply these tests in field trial completed	members of committees in the Center	Feb. 14-19
7	field trials completed according to schedule	trained Center personnel	Feb. 21-26
8	grades for each test tabulated and statistically analyzed for reliability and validity and for relationship with midterm test results	trained Center personnel	
	important guidelines deduced for continuation of the experiment		
	objective tests prepared for all basic subjects in the intermediate grades of junior and senior high school		

Source : Projects and Achievements in Educational Research, National Center for Educational Research, Cairo, 1977, p. 119.

on the final examination. The central theme of the process, therefore, was the provision for continuity: from specification of learning objectives, to formative evaluation, to summative evaluation; from beginning to end of the learning events in any particular course.

The procedures used by the group of developers are stated very specifically in the report called Projects and Achievements for Educational Research, (from the National Center for Educational Research,1977). Teachers were asked to establish the test intervals and arrange the subject matter for each course into segments appropriate to these intervals. Cards were prepared, each stating a major concept of each segment or unit, with space left on the card for a question or questions to be written in. The subject matter specialist then took these cards, grouped by units, and stated measurable behavioral objectives which were representative of each unit and in accord with the previously specified curriculum objectives for each subject matter. Information was added to each card stating how the desired learning could be measured, and noting the scientific importance of the concept and its measurement.

Jointly, subject matter specialists and evaluation specialists worked on this phase of the project, with evaluation specialists writing the questions and alternative questions for each card. The lower-half of the card was left for reporting the results of statistical analysis of each question after trial examinations had been administered, including degree of difficulty of each question and reporting whether the question would be included in the final examination.

Questions were finally placed in test booklets, with prepared instructions and clues for answering a few sample questions given at the beginning. Each test had a specified time frame. A grading key was prepared by the Center specialists for quick scoring of answers. The evaluation specialists instructed teachers in the use of the tests, and the methods chosen for reporting results to the General Administration for Examinations. The Department of Analysis would analyze results and send an interpretation of outcomes back to the teachers. Teachers would then have the opportunity to revise instruction on the basis of this interpretation of test results and to make certain that concepts and questions frequently missed were reviewed and reinforced before the next testing period.

By the time of publication of the Center report (1975-76), the project had begun the last step (Step #8 on the timetable) of preparing similar testing instruments for other grades of the junior and senior high school.

Establishing a Strategy for the Future

In 1974, a recommendation from the National Center for Educational Research called upon Egypts' educational leaders to begin to think concretely about the need to establish a national strategy for educational planning. Such a strategy would have the advantage not only of predicting growth dimensions--in terms of how many schools would be needed for how many pupils, how many teachers would be available to teach them, and how much it would all cost--but also of placing such projections in their appropriate contexts so that broader implications would emerge.

During the ensuing conference, three aspects of strategic planning were addressed: (1) the development of a general conceptual framework for understanding the principles and demands of a national educational strategy, (2) the identification of contexts, elements, aspirations, goals, priorities and logistical problems which must be taken into account, and (3) the logical outcomes of these discussions in terms of national directions, steps which must be taken, and strategy management mechanisms which must be set in place.

The first task of the conference was to define the concept of strategy itself. The concept is a critical one, of mounting importance not only for Egypt, but for the Arab world as a whole (as, in fact, for every other nation in the world). It is also the single most central issue in each of the case studies which are undertaken here. To the extent that educational leadership has recognized the necessity for strategic planning, to that extent also have their respective educational systems become active, rather than reactive, in managing the directions of change.

In the specific case of Egypt, it was pointed out that the impact of education on individuals is internationally recognized, and that in a rapidly changing world, the strongest, most vital national education will also have international elements and perspectives. Societies are no longer isolated from each other and there is danger that, without conscious and carefully planned strategies to control the directions and dimensions of change, nations will be confronted with chaotically proliferating educational, political, economic and social systems which seem to have no relation to each other and which separately have no coherent goals or futures.

Conference participants faced the necessity to cope with change and recognized that educational planners must be engaged in the reevaluation and reconstruction of the services and production of

Egyptian society. They expressed their hope that differences between Egypt and the rest of the world would not grow larger, but that such developments as rural electrification, mechanized agriculture, increased iron production as the basis of heavy industry, and modern communications would enable Egypt to evolve a modern economy.

It was stated explicitly that what makes renewal of education absolutely essential is that, for the first time in Egypts' history, education seems capable of leading the change process in the society and contributing strategically to a carefully planned economic revolution and revitalization. But renewal of any sort requires a unified approach if it is to be effective. This does not mean formation of monolithic structures to dictate what must occur, but rather a deliberate amalgamation of many fragments and attitudes and aspirations in order to find common purposes and workable ways to achieve those purposes.

At the very least, the conference report says, national renewal demands (1) a commitment to change and, (2) a strategic view of change processes. Strategy development itself requires effective information channels within the educational system and between that system and all other sectors of society. And the necessary information channels are not established by accident, but through intensive scientific planning and shared creativity.

Egypt is generally recognized to have made great social progress since the 1952 revolution, but conference participants were frank to say that educational equality has not yet been realized. Though equal opportunity is legally established, there are as yet no assurances that Egypts' citizens are equally prepared to take advantage of that opportunity, or that sufficient educational diversity exists to accomodate variations in individual goals and abilities.

Planning for educational change is not merely a matter of extending individual rights or creating a new kind of social service; it is literally an investment in the future of Egypt and of the Arab world, these planners agreed. Having already developed a sizeable scientific community and other educationally qualified personnel, Egypt feels a profound sense of responsibility to assist other Arab nations in their internal development and emergence as members of the international society. In this sense, the urgency of strategic change becomes all the more apparent. Egypt has not been spared the kinds of problems common among developing nations, and if the nation can arrive early at solutions which are prototypical for others, it will have made an enduring contribution to progress in the Middle East.

In short, the difference between approaching educational problem-solving as a well-conceived national strategy rather than as a series of loosely related development projects lies in a new perception of the scope of educational responsibility and in the identification of and willingness to deal with much greater numbers of variables which must be coordinated. It is this level of educational, economic, political, and scientific sophistication which was addressed in the strategy conference and which is now demanded of Egypts' educational reformers.

Strategy, then, is defined both conceptually and in action; neither can be sacrificed for the other. Once planners have learned to think strategically, they are no longer satisfied with typically linear approaches, but must consider instead all of the matters impinging upon education and all of the matters which education in turn influences. They are then prepared to decide on the most appropriate courses of action in light of these mutual influences and after considering a number of different alternatives together with their probable consequences.

Despite educational progress in Egypt on many fronts, curriculum development specialists there seem very much aware that the concepts and practices characteristic of strategic thinking are not yet widely understood or accepted. Potential resources in the national environment remain unidentified or under-utilized in general curriculum planning, e.g., members of the vocational and industrial communities. Students, the persons who stand to gain or lose most from strategic planning or lack of it, are heard only through indirect channels. Local schools themselves, given encouragement to develop their own styles and educational practices within accepted bounds, may become a rich source of ideas and innovations.

The answer to Egypts' economic problems may very well depend on the effectiveness with which education is related to other aspects of Egyptian life. Even if there were unlimited funding available for the nation's schools, and large budgets were the rule rather than the exception, still there could be no absolute guarantees of educational improvement.

The encouraging theme which runs throughout the recent reports of curriculum development in Egypt, however, is that there is growing awareness that educational problems remain obstinate because they are more complex than they initially seemed to be. But planners are not disheartened; they believe that even complex problems will eventually yield to comprehensive strategies and change-oriented methodologies.

Chapter 4

THE CASE OF IRAQ

Of the six nations studied in this research, only Egypt exceeds Iraq in total population. Like Egypt, Iraq is fortunate in its water supply and river land fertility. The Tigris and Euphrates rivers, together with the petroleum industry, form the basis for Iraq's economy.

Iraq has been a republic since 1958. One of the promises of the independence movement was the reform of education, and in fact, considerable progress has been made despite the overwhelming problems of adult illiteracy, inadequately trained educators, shortages of schools, and traditional curriculum materials which the new socialist regime inherited. The basis for educational change in Iraq is frankly political. The nation is deeply concerned with strengthening not only its internal unity but also its unity with other Arab nations. It is conscious as well of having a role to play in international affairs.

Women have had the electoral vote in Iraq since 1958. Education has been nationalized and all public schools and textbooks are free. Children between the ages of six and twelve are subject to compulsory school attendance, and adult literacy education has also been made obligatory. The spirit of educational reform is pragmatic as well as political; Iraq is interested in quick results from its socially and scientifically objectified educational programs. Perhaps for these reasons, Iraq adopted almost immediately a positive view toward mediated learning, a broad interpretation of curriculum and curriculum development, and a firm commitment to the socialization and human relations aspects of modern schooling.

The Iraqi philosophy of curriculum change, then, is bound to the philosophy that schools are social groups within which all members of that society -- teachers, pupils, and administrators -- interact dynamically to fulfill their separate needs. Changing curriculum means changing the nature of the school society. Topics of concern at the annual seminars of the Center for Educational and Psychological Research, Baghdad University, are clear evidence of the growing perception that social change and curriculum development are inextricably linked, and that the behavioral component of education has been too long ignored.

Financing the Schools

National educational planning is an integral part of Iraq's five-year development cycles. Educational expenditures for 1973, the last year reported in the UNESCO Statistical Yearbook, reached a total of 69,420 thousands of dinar,* not including expenditures for universities. (See Table 9, p. 116). The share of all public expenditure which was reserved for education in 1974 was 18.2 percent of the total. Over the years since 1965 educational allocations have held fairly consistently at about 20 percent of total national expenditure and between four and six percent of gross national product (GNP). These trends are illustrated in Table 8.

The educational total as percent of all public expenditure does not include capital spending, which the table shows has been kept to a bare minimum. Though capital expenditures almost tripled between 1965 and 1972, they have represented less than three percent of the annual educational budget. Current expenditures have made less spectacular gains, but have (in the years shown) always consumed most of the available educational monies in any given year.

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*The Iraqi dinar converts to $2.70, U.S. currency.

Table 8: Total Public and Current Expenditure and Capital Expenditure (in thousands); Percentage of GNP; and % of all Public Expenditure: Iraq

year	total expenditure (in dinar)	current expenditure (amount)	(as % of total)	capital expenditure	total as % of GNP	total as % of all public expenditure**
1965	41,679	41,284	99.1	395	5.6	22.9
1970*	62,019	60,228	97.1	1,791	5.5	20.9
1972	68,932	67,827	98.4	1,105	4.8	19.3
1973	---	78,645	---	---	4.2	20.8
1974	---	119,731	---	---	---	18.2

* Expenditure of the Ministry of Education only

** Current expenditure only

Source: UNESCO Statistical Yearbook, UNESCO Paris, 1976, p. 383.

Using the UNESCO classification system for educational levels, it appears from Table 9 that public educational expenditures are heaviest at the first level, which includes primary and pre-primary education. This is, of course, a typical pattern in developing countries which do not have long histories of universal education. Only third level expenditures seem to have shrunk between the years 1965 and 1972. The percentage of expenditures not allocated by level have grown steadily, probably indicating that there is a significant increase in general kinds of educational funding and that there is also some increased flexibility in the use of the available money. It should be noted also that the figures given for 1973 do not include spending for university growth and maintenance, and are therefore somewhat misleading concerning the total budgetary commitment to education in that year.

Table 9: Estimated Public Expenditure on Education in Iraq (in thousands) and Percentages by Level

year	total in dinar	first level[1]	second level[2]	third level	other types of education[3]	expenditures not allocated by level
1965	42,866	65.9	18.3	12.9	---	2.9
1970	61,106	61.4	19.8	15.7	---	3.1
1972	67,827	65.0	19.5	10.7	0.8	4.0
1973*	69,420	73.3	21.4	---	---	5.3

*Not including expenditures for universities

1 includes preschool and primary
2 includes general, teacher training
3 includes special education, adult education and similar institutions

Source: UNESCO Statistical Yearbook, UNESCO Paris, 1976, p. 410.

School Enrollments and Teaching Staffs

At the first level of education, the average teacher to student ratio in 1974 was about one to twenty-six, though of course some classes were larger than others depending on locality. According to Table 10, there were 35,367 pre-primary students, over a million and a half primary school children, nearly half a million secondary school students, and 65,481 third level students enrolled in the public school systems in Iraq in 1974. These large numbers were served by a total teaching staff of slightly more than 80 thousand.

Almost three times as many pre-primary teachers were employed in 1974 as in 1965, as the student population rose by 20 thousand. At the elementary school level, 15 thousand teachers were added to accomodate an additional half million students during the same time period. Second level teachers more than doubled, and third level instructors rose by a similar factor.

Table 10: Number of Pupils and Teaching Staff on the Three Levels of Education in Iraq

	year	no. of pupils	no. of teaching staff	teacher/pupil ratio
Pre-primary education	1965	15,307	479	1:40
	1970	13,686	614	1:22
	1973	16,874	865	1:20
	1974	35,367	1,391	1:25
First level	1965	964,327	42,878	1:22
	1970	1,098,880	49,822	1:22
	1973	1,408,929	58,455	1:24
	1974	1,523,955	57,621	1:26
Second level	1965	254,451	7,992	1:32
	1970	313,856	13,274	1:32
	1973	405,006	16,182	1:25
	1974	479,795	18,437	1:26
Third level	1965	28,377	1,455	1:20
	1970	42,431	1,822	1:23
	1972	56,599	2,483	1:23
	1973	65,481	2,843	1:23

Source: UNESCO Statistical Yearbook, UNESCO Paris, 1976, pp. 127, 144, 190 and 246.

It is obvious from the UNESCO tables that Iraq has been faced with markedly increased school enrollments and educational costs, but that these increases have been fairly evenly distributed over the years since 1965 so that no overwhelming influx of students or exponential cost increases have been registered in any single year. The steadiness of the rising enrollments and fiscal acceleration enables Iraq's educational leadership to predict quantitative needs in advance and to turn its attention to more qualitative schooling matters.

Organization of Schools

Unlike most nations, Iraq includes two years of pre-primary education as part of the regular public school system. Children start school at age four. The stages of education beyond that level conform to the 6-3-3 formula typically found in the Middle East as well as in many industrialized nations, with six years spent in elementary schools and three years spent in each post-primary stage up to the awarding of the secondary school baccalaureate. The intermediate stage is equivalent to junior high school or preparatory school.

Because of its size, its diversity of populations (including several minority groups), and its commitment to vocational training, Iraq offers eight basic options in secondary school education, two of which are provided by the traditional branching of the general high school into literary and science studies. Other options are commercial, agricultural, industrial, technological, and fine arts education. The eighth alternative for the student finishing intermediate school is to enter a teacher training institute. These options are shown in Figure 2. This schematic representation does not show the range of professional and vocational course work available to college and graduate school students, but in fact there is also considerable diversity in higher education in Iraq.

Another category of education includes a number of programs which do not fit the standard stages. Among these are literacy and adult education; special education for the emotionally, mentally, and physically handicapped; youth education for students who are of normal school age but who have somehow not been able to do well in mainstream educational programs; and other forms of non-traditional education such as skill training programs of various kinds and duration.

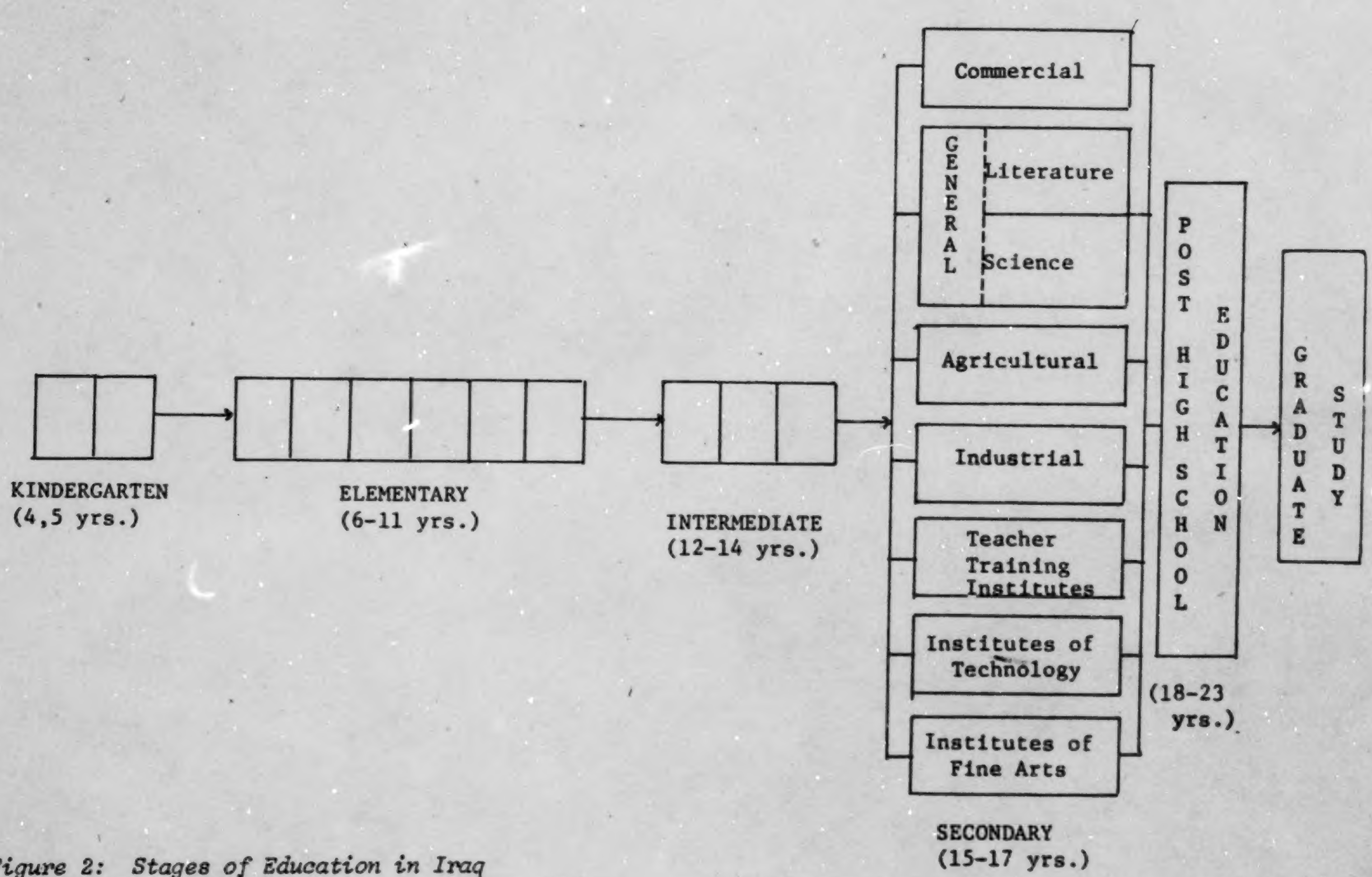
KINDERGARTEN
(4,5 yrs.)
ELEMENTARY
(6-11 yrs.)
INTERMEDIATE
(12-14 yrs.)
Commercial
GENERAL
Literature
Science
Agricultural
Industrial
Teacher Training Institutes
Institutes of Technology
Institutes of Fine Arts
SECONDARY
(15-17 yrs.)
POST HIGH SCHOOL EDUCATION
(18-23 yrs.)
GRADUATE STUDY

Figure 2: Stages of Education in Iraq
Source: Chart furnished by the Ministry, 1978.

Iraq's educational planners have taken seriously the notion that "education" means any change in behavior, attitudes, knowledge, skills, and abilities. They subscribe also to the principles of life-long education, hoping to provide facilities for skill maintenance and improvement to meet a wide spectrum of individual needs and interests throughout the lives of Iraqi citizens.

Literacy education is for Iraqis aged 15-45 who have not had the opportunity to begin formal education at the appropriate school entry ages. The literacy programs are conducted at special centers throughout the nation. Job development programs are aimed at upgrading the functional skills of industrial and other employees, either through re-training or through instruction in new operations. These educational efforts are also located in special skill centers or training sites. The youth education programs primarily serve school drop-outs or others who have missed from two to ten years of formal education but who are not yet old enough to be eligible for the literacy programs. The ages of these youngsters range from ten to fifteen.

For data collection and analysis and for educational planning generally, Iraq uses the International Standard Classification of Education (ISCED) as defined by UNESCO. The classification system enables Iraq and other United Nations countries to use similar categories and derive comparable statistics concerning national manpower needs, numbers of students at each stage of education, budget allocations, etc. The Directorate of Educational Planning in the Ministry has specified the use of this international metalanguage in a handbook issued in 1978.

ISCED enables nations to code curriculum offerings by school stages or levels, by subject matter categories or by types of non-traditional programs, and by general fields or disciplines. There are also code numbers for educational activities which do not easily fit other categories. The resulting combinations of code numbers might signify, for example, that chemistry (last two digits) as a subcategory of natural science (preceding two digits) is taught at the third level of education in a form which is not equivalent to university course work but which instead leads to a special certificate (first digit). It is felt that this numerical symbolization can help to identify qualified workers who do not necessarily have high school or university education but who do have special training in a given field. It can also help to identify gaps in the total curriculum offerings of a nation's educational system.

Organization for Curriculum Development Activities

At Ministry level, there has been established a general directorate or division which has the responsibility for all curriculum development, including the preparation and production of educational media. Under the mandate of the Ministry (No. 13) issued in 1972, this General Directorate for Curriculum and Educational Media has jurisdiction over five sub-units or departments. These are the Departments of Curriculum and Textbooks, Educational Media, Educational Television, Laboratories, and Books and School Libraries. These units are shown in Figure 3.

The five departments and the General Directorate all together employ approximately 240 workers, including clerical staff. Fifty percent of staff time is devoted to curriculum, 40 percent to educational television, and 35 percent to other educational media. Educational and training qualifications vary tremendously within these units.

The Curriculum and Textbooks Department has five primary functions: (1) preparation of curriculum and curriculum units, (2) preparation of

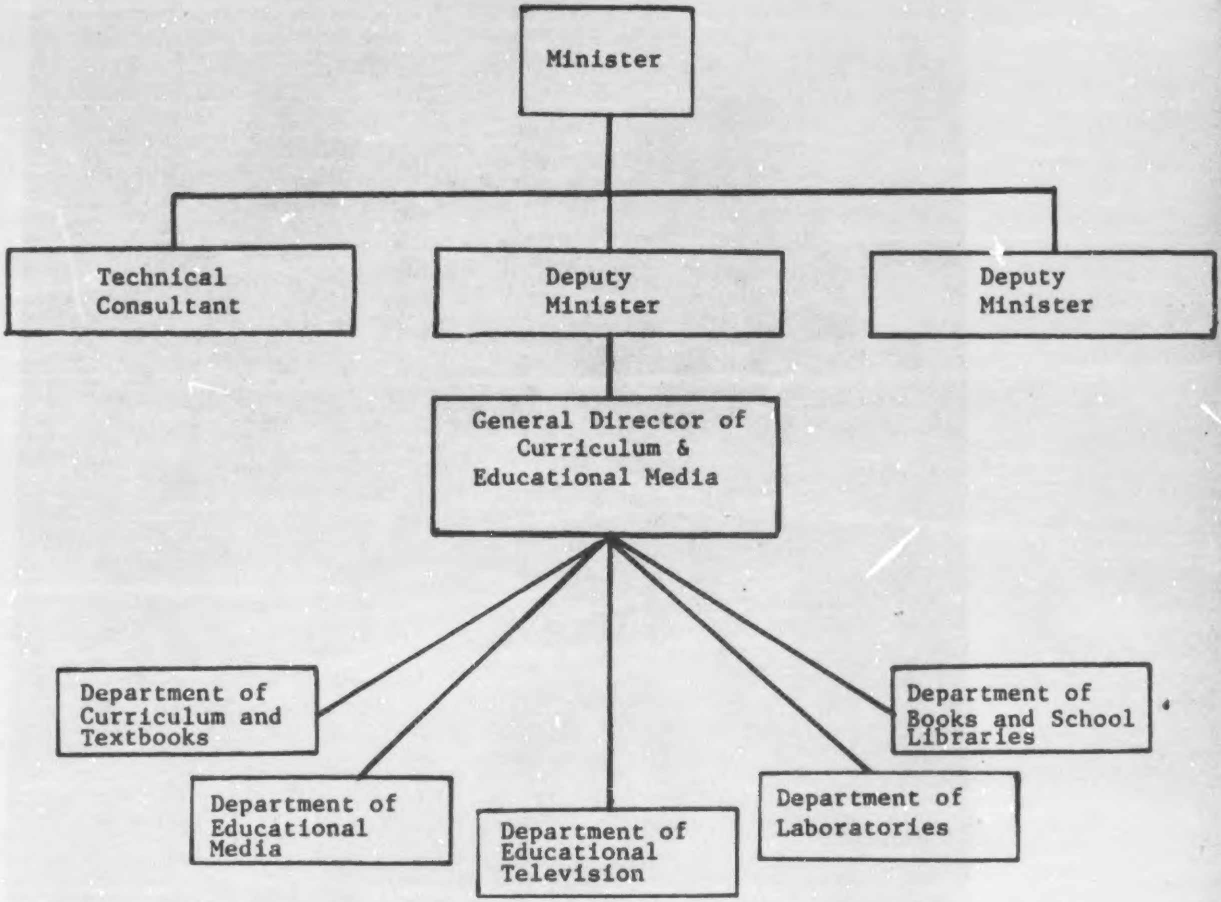
Minister
Technical Consultant
Deputy Minister
Deputy Minister
General Director of Curriculum & Educational Media
Department of Curriculum and Textbooks
Department of Educational Media
Department of Educational Television
Department of Laboratories
Department of Books and School Libraries

Figure 3: Curriculum Development Units in the Ministry of Education, Iraq
Source: Interviews, 1978.

school texts for the successive stages of education, kindergarten through high school, (3) development or adoption and testing of educational methods and theories congruent with national policies, (4) evaluation of curriculum and texts, including the assessment of problems of application in the classroom, (5) initiation of educational research, and (6) preparation of teachers' manuals to guide the implementation of new curriculum and teaching practices.

There are different standing committees in the Curriculum and Textbook Department which are specialized by subject matter. Each works on its own specialty (e.g., Arabic or foreign language, home economics, aesthetic education, math, biology, history, etc.), but all of these committees communicate with one another to avoid overlap and to coordinate their activities as seems useful. There are five major groupings: science, social science, children's curriculum (pre-school and early elementary), language curriculum, and a technical assistance unit which supplies graphics and photography. Educational psychologists have membership on all of these committees, to insure that conceptual mastery and skill requirements are within the developmental reach of the students for which the curriculum is intended.

These committees are responsible for maintaining the relevance of the subject matter to individual students and for seeing that the long-term objectives of each discipline are considered in light of the total educational context. Each committee also has designated people whose special responsibilities are curriculum innovation and evaluation, and each of these standing committees is chaired by the Deputy Director of the Curriculum Department.

Books are formatively evaluated, so that there is continuous revision vis a vis the rapid developments in science and education. In 1978, evaluation of more than 120 texts, representing all different stages of education, was underway. If complete rewriting seems necesssary as a result of this evaluation, a recommendation to this effect is made and acted upon by Ministry leadership.

This year, the Curriculum Department has been experimenting with the distribution of small copybooks to accompany textbooks. These contain enrichment materials such as stories of cultural or geographical objects or events, presented in conversational language. Titles of these books include Tour in Iraq, The Colors, The School Garden, Blood, the Liquid of Life, Arabic and Islamic Ornaments, Magnetic Fields, etc.

Charts, contour maps, transparencies, three-dimensional models, filmstrips, films, slides, audiotapes, and other instructional aids are prepared by the Educational Media Department for subsequent distribution to the schools. This unit also has charge of a media library which includes both imported and locally made materials. Two printing presses are operational, and the purchase of a third is planned to speed the output of print media. The Educational Media Department also supervises and provides technical services to media centers at district or regional levels.

The Department for Educational Television has several related missions, but its primary task is the production of educational TV programs to enhance the curriculum offerings in all types and levels of education, and to provide citizen education generally. Many of its prepared programs are designed to expand the student's knowledge of different cultures and to develop greater awareness of the values and practices in his own culture. There are already some 1,200 or more schools which have been equipped with TV receivers. Schools receive a special schedule of the available programs in advance of their airing.

The Department of Laboratories has general oversight of inspecting, equipping, and maintaining school science laboratories. Besides these inventory and procurement functions, the unit has responsibility for improving the instructional use of these laboratories and for encouraging the experimental efforts of students. The Department files an annual report covering both aspects of its developmental work. The unit cooperates with Curriculum or other departments as warranted.

The fifth major subdivision of the General Directorate for Curriculum is the Department of Books and School Libraries. It has several main objectives: (1) to improve the library services in the schools, (2) to produce library use statistics, (3) to increase the range and improve the quality of resource books, (4) to help train librarians in minority studies, and (5) in the next few years, to organize and establish an auxiliary department which will print and publish texts for Iraqi schools. There are several areas of special concern which the Department is confronting, including the need to provide current texts and references on scientific, political, and educational topics and the need to make progress toward the goal of providing libraries for each school and each class. School inspectors and librarians are asked for their suggestions in both instances.

Research Responsibilities of the Five Departments

In interviews with curriculum development personnel in the Ministry, a complex picture of research and change activities emerges. In the Department for Curriculum and Textbooks, for example, curriculum development, text preparation, and the conduct of relevant research studies are not only related to each other but also to developments in educational television and teacher training. Recently, the Department has been vigorously engaged in the preparation of a new English language text (second year, secondary school) as well as a project which would expand science education. There are continuing efforts directed to the renewal of elementary education and to the implementation of a holistic approach to primary learning experiences. The entire curriculum of the elementary schools, the intermediate schools, and the youth education programs is undergoing scrutiny. New books, topically organized, are being prepared for kindergarten and early elementary grades, new texts on elementary education are being prepared for use in the teacher training institutes, and special subject-matter texts (e.g., new mathematics, geography, history, and citizenship) are also in process. Modern math texts are scheduled for first classroom use in 1978-79. (See also "The Project for Modern Mathematics in Elementary Education," p.131 of this study.)

The research component of this Department is engaged in a variety of studies and evaluation projects, some of which relate to the development of primary education and others which are aimed at curriculum change in middle and upper educational stages. Among the studies are evaluation of English reading programs, kindergarten through fifth grades; evaluation of the science teaching project; research concerning the disappointing records of student performance in Arabic language at all levels of schooling; a field study on home economics education in the primary grades; studies on the teaching of physics and chemistry in secondary schools; research on the feasibility of adding another foreign language option besides English (in cooperation with the Arab League); and evaluation studies concerning the teaching of biology in the fourth year of general high school, the addition of a fifth year of secondary education, and the improvement of math education at the intermediate level. Several of these studies are testing the usefulness of innovations which have been experimentally implemented in sample schools.

Other components of the Curriculum and Textbook Department are directly concerned with the implementation of teacher training programs, such as the in-service "refresher" courses for teachers of mathematics which were developed under Arab League supervision. Follow-up visits to schools provide information about the problems of implementation and adaptability of the new materials in actual school settings. Examination questions are being investigated, to test their relevance to the curriculum now being taught. Reports of educational inspectors and school principals are analyzed for the insights they may provide about the new curriculum materials and methods. The Department also assists in the evaluation and improvement of educational television and prepares some other kinds of media programs for the schools (e.g., recordings of poetry).

The Educational Media Department incorporates developmental research as well as production activities. The department has played an active role in curriculum design for fifth and sixth grade English language classes, and has prepared and printed thousands of illustrations with English captions and descriptions. Some department personnel have spent several weeks in Sweden studying color printing processes, so that the use of color technology will eventually be integral to the Iraqi curriculum development process.

Research and evaluation activities in the Department of Educational TV have focused on several areas of concern: (1) the empirical realities of educational television and its use in Iraq, (2) educational TV and its use in other countries, (3) libraries in ancient times and in the Islamic period, (4) audio-visual aids and their impact on educational progress,

(5) training in television production skills, and (6) assessment of equipment and personnel needs. The Department systematically tests the positive and negative outcomes of instruction via educational TV through on-site classroom observations and through sampling of student and teacher opinions. Training programs involve internships and field trips to other countries as well as locally conducted seminars and workshops. It is a part of the mission of this department to record and rebroadcast special events, festivals, and visits of foreign dignitaries. The unit also produces print materials for use with or for publicizing of educational programs.

Even the Books and School Libraries Department is involved in research and training activities. The department has initiated a library research training program for teachers, scheduled in groups of 50, which focuses on use of library facilities in the preparation of papers and reports. To collect data on book needs and use in individual schools, the department is encouraging the formation of local library committees. There are special incentives to insure local involvement: no books will be placed in schools until a separate library room has been provided to house them, and book purchases will be contingent upon the receipt by a Central Committee in the department of annual reports and book requisitions from the local committees.

The department is making a special effort in minority education. From 1970 to 1974, the unit worked cooperatively with the Department of Curriculum and Textbooks to produce an alphabet book for minorities, and in 1971, provision was made for the development of a minority studies program in the teacher training institutes. Internally, the Books and School Libraries Department is receiving special Ministry support to encourage its librarianship programs and minority studies. The Department also has charge of arranging conferences and workshops to facilitate a better understanding of the importance of print media acquisitions and use. Increased budget appropriations are further evidence of the high priority which the Ministry is placing on the expansion of library resources.

The work of the five departments within the General Directorate for Curriculum is observed to be proceeding despite two kinds of human constraints: the lack of sufficient numbers of personnel, and the inadequacy of existing workers' qualifications. In Curriculum and Textbook and Educational Media Departments, for example, there appear to be a sufficient number of employees, but there are tasks to be done for which no one has been trained. Though there are 48 staff members in Educational Media, there are none who are specialists in the maintenance of printing equipment. Of the 53 people working in Educational Television, only one is a graduate engineer. These deficiencies can be managed in one of two ways: by utilizing outside personnel for major productions (e.g., staff from the General Institute for Radio and Television or from the Ministry of Higher Education and Science Research) or by retraining of department personnel according to individual needs, both inside and outside of Iraq. Further, it is felt that employees who receive additional training or degree education may be encouraged to remain in Ministry service through special salary or other incentives.

There are also heavy constraints imposed by the lack of appropriate facilities to house the curriculum development departments. Buildings are likely to be rented and not functionally suited to meeting the departments' objectives. Further limitations are the lack of school buildings and of facilities within existing buildings which would support curriculum innovation and implementation, especially where use of media is involved. There are problems also in distribution of materials and servicing of local school media and library centers. Rapid transportation and continuous communication are sorely needed.

Regardless of the constraints identified, the General Directorate for Curriculum is proceeding, one step at a time, toward the implementation of a new politically and socially mandated educational system. Qualitative change is a goal clearly in view, though it is admitted that quantitative change is also incomplete. Curriculum development leaders in Iraq express their awareness that their work is interdependent with the work of other Ministry agencies, and they seek the cooperation needed to achieve mutual goals. Curriculum change is viewed as necessitating change in other parts of the system: e.g., the use of educational TV involves new teacher training programs, the provision of viewing rooms and equipment, and the training of TV technicians and repairmen. Cooperation with different units in Educational Training and Supervision is considered especially vital, and is presently being effected satisfactorily.

There are recurrent themes throughout the interviews conducted in Iraq which point to long range goals and expectations. Increasingly, the curriculum development process must be undergirded by a technical support system, and eventually, the equipment, media, and production facilities should be made in Iraq rather than imported. The planners envision an expansion of educational television to reach all parts of the nation and a development of library research capabilities even at the elementary school level. Laboratories must be well-equipped and effectively utilized, and there must by continued experimentation in curriculum development and in the application of modern educational theories.

Until Iraq can come within reach of these long-range goals, however, assistance of and cooperation with other countries and international educational agencies will be a conscious part of Iraqi educational and political policy. The two projects discussed in detail in the following pages have made significant use of outside consultants, both in determination of substance and in facilitation of process.

The Project for Modern Mathematics in Elementary Education

In 1970 and 71, pressed by their observations that students' mathematical abilities were not developing strongly and that both parents and teachers were complaining about the inadequacies of traditional mathematics education, the Ministry initiated a series of steps meant to bring about major curriculum reform.

The first step was the convening of a committee of specialists, composed of Iraqi, other Arab, and UNESCO consultants in math education. This group researched and outlined the problems as they appeared, and made recommendations concerning means for changing of attitudes about math and math teaching.

At this point, a newly constituted National Institute for Improving Mathematics Education in Iraq was given responsibility for the development of a new math curriculum and the on-going evaluation of the change process. The membership of this unit consisted of (1) specialists in theoretical and applied mathematics content, including statistics, (2) members of the standing committee for mathematics in the Curriculum and Textbook Department of the Ministry, (3) subject matter inspectors, (4) teachers recruited to the committee as needed, representing all levels of schooling, and (5) curriculum specialists and educational psychologists from university faculties.

This research group approached a review of existing curriculum and its effects from a number of directions, as follows:

1. initiation of direct dialogue with teachers in each grade of elementary education and survey of texts used;
2. administration of a questionnaire to a random sample of elementary school teachers, asking for their evaluation of the available texts (this study was conducted with the assistance of the Curriculum Department and the Center for Educational and Psychological Research);
3. achievement testing of a random sample of third and sixth graders, to assess computational skills, problem-solving abilities, and understanding of math concepts;
4. creation of sub-committees to examine curriculum units and texts in detail;
5. mounting of a comparative study of elementary school curricula in other Arab nations (e.g., Egypt, Jordan, and Kuwait) and the international community (especially the Soviet Union, West Germany, the United States and France);
6. Preparation of an analysis of numbers, availability and educational qualifications of mathematics teachers; and
7. compilation and interpretation of data and recommendations submitted by various levels of educational subsystems.

On the basis of the data generated, the National Institute for Improving Mathematics Education opted for a complete change in the system, involving a re-evaluation of objectives, reorganization of units, alteration of methodology, design of approprate teacher training, and development of new texts.

The thorough review which led to these conclusions marked the beginning of Iraq's first modern scientific evaluation of the effects of traditional mathematics education versus modern math instruction. Subsequently, first and second graders in Baghdad schools were the subjects of controlled studies and two types of measures were compared. The first measures were achievement scores of students taught by each method, and the second set of scores compared frequency and types of computational errors of students in each treatment group (second grade only).

With experimental results favoring the modern math instructional approach, the planners proceeded to state new objectives, revise and integrate curriculum units, devise new teaching strategies, and appoint textbook writers. Teacher training units in the Ministry were asked to help with the task of preparing in-service training sequences in order to familiarize teachers with the new curriculum. A number of model lessons were prepared and presented on educational TV as a means of orienting teachers and students toward the new conceptual approach. Revision of pre-service education for math teachers was begun, and a plan was established to evaluate the new curriculum formatively during its first years of implementation.

Six years were alloted for progressive introduction of the new curriculum at the rate of one grade per year, beginning in 1971-72. By 1976-77, all six elementary grades had completed the changeover.

Curriculum for the intermediate grades was also prepared and tested. The middle school curriculum was implemented in two schools on an experimental basis in 1974-75. For these trials, curriculum outlines and teachers' manuals were prepared by the Arab League and modified to fit the Iraqi situation. This middle school math curriculum was generalized to other schools in 1977-78.

Experiments in modern math education are underway at the secondary school level, and researchers are looking forward to assessing the effects of the modern math approach in high school on the subsequent achievement of university students.

Throughout the curriculum development period, an emphasis on the use of mathematical evaluation instruments has been maintained, and these instruments have been steadily refined to increase their validity and reliability. Textbooks are to be produced in final form for use in the academic year 1978-79. Currently, researchers are also planning the evaluation procedures to be used in assessing the first and second grade math programs in the intermediate schools. The curriculum of the first year of secondary school will be assessed during 1978-79.

The goals of these evaluations have been and continue to be comprehensive. From the development of assessment instruments and the testing of learning treatment effects to the interpretation of outcomes and making of decisions about future developments, the approach has been holistic and sustained. A variety of data, objective and subjective, has been generated and there has been a continuous attempt to use this data in constructive ways. The position of modern math in relation to other subjects has been a central concern of the developers.

In essence, the outcomes are that the conscious development of mathematical thinking along with the provision for skill practice has strengthened the mathematics curriculum. There have been problems in implementation, however. Some of these difficulties were anticipated and some were not. To some extent, schools have been apathetic about carrying out the change process, partly as a result of the teachers' difficulties in altering established teaching practices and abandoning familiar ways of thinking about math skill development. But the developers have also identified a number of substantive problems with the curriculum itself as it was first presented to the teachers to implement. The problems (which subsequent revisions have sought to overcome) are enumerated as follows:

1. presence of some ambiguity in the statement of objectives;
2. inappropriate distribution of units in relation to divisions of the school year or to the ages of students;
3. lack of logical sequencing of some steps and need for more lengthy explanation of some concepts;
4. insufficiency of examples and too few problems for skill practice;

5. inadequately designed books and other instructional materials;
6. lower achievement scores than were expected, despite evidence that students were grasping concepts more readily;
7. inadequacy of skill training of teachers in preparation for integrating new concepts and using new methodologies to attain the stated objectives;
8. failure to publicize the new approach sufficiently or to gain the confidence of teachers and parents in the effectiveness of the proposed changes; and
9. insufficient administrative planning for the process of generalization, so that school principals and school inspectors were unprepared to deal with the passive resistance of teachers expressed either covertly or overtly as they struggled with the implementation phase of the innovation.

New working assumptions are that, despite their general approval of the new curriculum as stated in conferences and via questionnaires, teachers are not yet sufficiently skilled or psycholgically prepared to follow the recommended procedures for implementation. Specifically, therefore, the evaluators propose that a means for continuing education of math teachers should be devised, and that special public relations efforts should also be concentrated on communication of new math curriculum comcepts to parents, teachers and the general public.

Despite the admitted need for further development, the new math curriculum already represents a major reform and constitutes an example of the care and attention which must be given to produce usable research results.

The Development of Educational Television

Television came to Iraq in 1955, as a communication medium for the Ministry of Information. Its first connection with school affairs was the presentation of a half-hour program called the "School Corner" which publicized student competitions and other school events of general interest. In 1965-66, the regular television channels carried educational programs which were intended to serve as subject matter refreshers prior to administration of the national school examinations. Beginning with these first efforts at serious television instruction, the broadcasts were expanded to cover one hour of programming per day, with three model lessons as content.

On the basis of positive feedback received via letters sent in by viewers, another half hour was added in 1967-68. The new program was called "The Cultural Dictionary." During 1968, the Ministry of Education formalized an agreement with broadcasters, providing specifically for educational TV studios and broadcast facilities for educational productions. Although this was an era characterized by complete cooperation between the Ministry of Education and the Ministry of Information's General Institute of Television, there were several difficulties inherent in the shared operation. Producers were not themselves educators and were not knowledgeable about the instructional process. Lessons were not carefully rehearsed, and complete dependence on facilities designed primarily for other purposes severely constrained the educational productions in other ways. Allotted time proved insufficient for designing an integrated instructional approach and evaluating finished products for their educational and aesthetic value. There was no higher committee for follow-up, no library or other production materials of specifically educational nature, and there were insufficient numbers of personnel as well as inadequate budget support for effective television programming. Presenters were untrained, and the lessons on television were not significantly different from those normally presented in the classroom. Most programs were, in fact, simply recorded lectures.

As a result of these severe limitations, the Ministry of Education set a new course and established its own Educational TV Center. It became an independent unit in 1973, with its own broadcast channel and its own production personnel. Administratively, it was placed under the General Directorate for Curriculum and Educational Media.

The first receivers were installed in 50 schools in Baghdad and programming was confined to mornings. The experiment proved so successful, however, that 1,200 schools in three stages of education now receive broadcasts via the microwave network. Early evening programming has been added and the range of subjects covered is continually expanding. For the most part, programs are meant to complement school curriculum, but other school-related events, atheltic contests or exhibits may also receive educational TV coverage.

Relying at first on the technical assistance of a British consultant, the Iraqi planners sought consciously to develop a rationale and purpose for educational TV that would take into account the unique social revolutionary goals of the nation. Reflecting that Italy's educational emphasis has been on vocational education, that Japan has used TV broadcasts to extend instructional capability which was otherwise reduced by a teacher shortage, that France and Britain have conceptualized TV as a supplemental instructional aid, and that many developing nations are depending on educational TV for literacy education, Iraq began to view its own broadcast objectives as a combination of all of these. Specifically, it was determined that the new television facilities would be used in every way possible to help achieve the nation's educational objectives and to improve the political, economic, and cultural situation of the people. Basic objectives are stated as follows:

1. to help teachers to use modern technology and media in education; to help them develop new skills and profit from new experiences in modern educational methods;

2. to demonstrate the relationships of contemporary events and trends with changing school curriculum;
3. to train students in self-reliance and independent learning; to develop scientific attitudes and the spirit of research; and
4. to use TV equipment in the service of educational planning and in the provision of useful educational products, for the benefit of schools, universities, and literacy training centers.

There is a Higher Consultant Committee in the Department of Educational TV which provides general guidance for its development. This committee is composed of the Director of Educational TV, the Director of the Academy of Fine Arts, the General Directors of Educational Planning and Elementary Education, Directors of Educational Projects and Curriculum, science education specialists (often university professors), and various educational technology or broadcast consultants as appropriate. This committee makes the selection of academic and cultural subjects which will be covered, studies feedback on recent broadcasts as it is received from teachers and parents, and recommends solutions for problems that arise.

A second subject matter committee is responsible for organizing the material, script writing and production work. This group includes subject matter specialists and inspectors, teachers, and technical personnel in the department. There are many possible subject matter groupings; e.g., in elementary education there have been committees formed for Arabic language, English language, general science, social studies, and mathematics. Each committee prepares an annual work plan for a year in advance, dividing content into units, deciding how much to incorporate in each unit, suggesting an appropriate presenter, and working with technical staff. Although the management or administrative unit in the Department makes the final appointment of presenters, the subject matter committees' recommendations are generally accepted. Teacher presenters are chosen on the basis of voice quality, broadcast personality, ability to communicate, and attitude toward the subjects to be presented. They are also given special training in techniques of TV presentations and "stage presence" before they go before the cameras. Presenters are encouraged in their efforts by being assigned only one-third of a full-time teaching load. subject matter inspectors who are involved in the TV productions perform only one-sixth of their normal duties during the period of their participation in Department activities. There are also financial incentives. Most presenters are especially trained for these responsibilities, and their motivation is high.

There is a separate subject committee also for literacy education. Its membership consists of a Ministry chief who has primary responsibility for literacy and adult education, subject matter teachers, and a television director. Some 90 separate lessons in literacy have been prepared, concentrating mainly on reading and basic computational skills.

Literacy education is presented also in the Kordy language. The General Directorate for Kordy Studies has been active in the preparation and recording of literacy lessons and also in the development of lessons for intermediate education, physics, biology, and mathematics, all in the Kordy tongue.

Programs specifically designed to cover some aspect of teacher training have been incorporated in subject matter presentations: i.e., the training is expected to occur through regular teachers' vicarious learning from the teachers, who model the use of materials new approaches to subject matter, etc. In addition, some teachers have been trained specifically in the use of educational TV in the classroom, but the efforts to date in this area have been admittedly inadequate.

There are four permanent functional units within the Educational

TV Department. One is a management and planning unit, which provides administrative back-up, organization, and distribution of work-load for the production activities and for the dissemination of programs to schools. It is primarily the unit accountable for the Departments' mission and its accomplishment. The management specialists who work in this unit are concerned with the flow of communication, with arranging for training of personnel, with development of systems for equipment maintenance, etc., and with facilitation of all other aspects of the Departments' operation.

A second unit is an engineering component, largely concerned with technical maintenance and hardware responsibilities. The third unit has charge of actual production. This production component has a graphics design section, producers, directors, and various production resource materials and "stage properties." For example, a picture and film library is maintained and science laboratory equipment is kept available in order to provide pictorials or set properties for new productions. The program director is the "translator" of scripts, visuals and actions into the finished presentation. There is a preference for directors who are familiar with the subject matter under consideration. Most producers have fine arts and educational studies backgrounds, and may have had teaching experience. These decision-makers are assisted by a variety of technical production personnel. All productions are previewed and edited if necessary before airing.

In brief, the steps which are taken in the process of TV lesson preparation are divided into planning, production, evaluation and revision, and dissemination and follow-up phases. The normal sequence of events is as follows:

1. The subject matter committee convenes and develops its annual work plan, subdividing curriculum units as appropriate. A designated teacher writes lesson plans in the form of a script.
2. This script is presented to the subject matter inspectors who assess its strengths and weaknesses and suggest needed revisions.
3. When approved, the script is forwarded to the television director who arranges the photographic sequences and requests or gathers the equipment, graphics, and other materials needed. He trains and rehearses presenters, and transforms the script into a television scenario.
4. A final rehearsal takes place before actual video-recording.
5. The TV director works with the photographers, explaining the camera angles and other video recording details.
6. The day for recording is specified and the program is taped.
7. The program is played back for evaluation purposes, and if satisfactory, it is scheduled for broadcast.

Once the program is aired, the responsibilities of the fourth unit or component in the Department become visible. This is the follow-up unit, which is specifically charged with assessing the impact of broadcasts in the schools and reporting their findings to the Higher Consultant Committee. The staff of this unit includes specialists in education and psychological principles of learning, and they use these skills to evaluate the effectiveness of the TV learning experiences via field visits, opinion surveys, and observations of children and their reactions in the classrooms during and after broadcasts.

The comprehensive evaluation effort is viewed as absolutely essential, if programming is to improve and to meet the educational needs of the people successfully. Some of the questions evaluators ask themselves are:

1. Did the program present a clear and realistic picture of objects, ideas, processes, and movements with which it dealt?
2. Did the program achieve its intended purpose?
3. Did the program take into consideration the effects it would have on teachers and the experience and skills

4. Is the program as presented capable of motivating further study of the subject?
5. Is the presentation style and language level scientifically suited to the curriculum and to the age levels of student viewers?
6. Does the program fulfill real educational needs and complement existing instruction?

These questions are, of course, in the nature of formative program evaluation, and they add important dimensions to the consumer data collected in field studies.

The physical facilities where all production activities and, in fact, all of the Department is housed occupies 300 square maters of space. There are two projection rooms, one studio for production and rehearsal, a slide projection room, photographic and printing rooms, a film and book library, a graphics production area, reception and conference rooms, and office space for administrators and other personnel. Studio production work is carefully scheduled to make the most efficient use of the facility.

A schedule of regular broadcasts is prepared and distributed to the schools prior to the beginning of each school year, so that teachers can integrate the educational TV programs in their course planning. Teachers now also receive a manual which summarizes each program, highlights the major issues or concepts, and which serves as a reminder of planned broadcasts and scheduled times. Some programs also have accompanying student handbooks.

Since schools are crowded and TV receivers are still in short supply -- often no more than one per school -- classes which view the broadcasts are divided in shifts, according to whether they are attending morning or afternoon school sessions. The first three days of the school week, morning groups are the viewers, and the afternoon groups view the same programs, repeated, on the last three days of each week.

Table 11 illustrates the range of subjects and number of lessons per subject available in 1975-76 television offerings. Each broadcast is divided into three parts: a five-minute introduction, a 20-minute presentation, and a discussion period. Fifteen minutes is suggested for discussion of the broadcast among elementary school students, and 20 minutes is recommended for older learners.

In the year following the broadcast of these programs (1976-77), the Department accepted the recommendations of the Higher Consultant Committee for the following schedule and distribution:

Elementary Education - morning period

1. science and health education, sixth grade
2. geography, fifth grade
3. art education, sixth grade
4. modern mathematics, sixth grade

Intermediate School-morning

1. modern math, first year
2. physics, third year

Secondary School-morning

1. elementary English
2. secondary school English
3. chemistry, sixth year
4. physics, sixth year
5. zoology, sixth year
6. botany, sixth year
7. vocational education (agricultural, industrial and commercial)
8. modern mathematics
9. traditional mathics
10. analytical geometry

Other programs

1. kindergarten
2. educational news
3. "We and the Children"
4. language and science puzzles
5. educational games
6. educational issues.

Given these subject area guidelines, the Department began work on the analysis of content and the arrangement of concepts for scripting. Other programs have been developed around issues of special education for the handicapped, school theatrical productions presented by students

Table 11 : Statistics on TV Programs Presented in 1975-76, Iraq

sequence	subject	no. of lessons
1	modern math	26
2	English language for elementary, intermediate, high school, and teacher training	31
3	general math (high school)	15
4	Iraq geography (5th grade, elementary)	
5	health science (elementary)	
6	cultural and public interest programs	16
7	school activities and educational issues	62
8	analytical engineering and solid geometry (high school)	7
9	physics (intermediate)	17
10	zoology (high school)	4
11	calculus (commercial)	3
12	chemistry (high school)	4
13	vocational education (agriculture and industrial)	13

Source : "Achievements of the Department of Educational TV," 1975-76, Ministry of Education, Baghdad Iraq, p. 2, Memo undated.

of the Fine Arts Institute, and special cultural programs. A group consisting of two cinematic and two still photographers has been preparing a special presentation on contrasts in urban and rural social life.

Production crews have shot over 31,000 feet of film, on both scientific-educational and cultural subjects. Among these is a film designed to explain the need for teacher - parent - administrator cooperation and participation in school planning and activities.

Programs scheduled for evening classes begin at 6:15 p.m. and incorporate both general interest and special subject areas. Intermediate and secondary school lessons are aired in these early evening hours. 18 percent of all programming is related to school activities such as contests or drama, etc. Literacy programs are also given evening air time. A typical evening schedule is shown in Tables 12 and 13.

Table 12: Distribution of Evening Scheduling, Educational TV in Iraq

type of lesson	starting time (p.m.)	ending time (p.m.)	Minutes per lesson
literary education	6:15	6:40	25
School activities	6:40	6:55	15
first lessons, high school and intermediate	6:55	7:25	30
Second lessons, high school and intermediate	7:25	8:55	30

In Table 13, the emphasis on the science branch of general secondary education is apparent; only one course is scheduled for the humanities branch and it is a course in mathematics.

Department officials are confronting a variety of issues in planning for the future. They are attempting to standardize scheduling of programs from city to city throughout the country and are planning a new color TV recording and broadcast facility with U.S. consultants and building All educational TV programs will be produced in color once

Table 13 : Weekly Schedule of TV Classes By Subject

day	subject	level	time (6:55 to 8:55)
Sat.	Arabic	intermediate	6:55 (1st lesson)
	chemistry	science branch (6th yr.)	7:25 (2nd lesson)
Sun.	English	intermediate	6:55
	analytic geometry	science branch (6th yr.)	7:25
Mon.	zoology	science branch	6:55
	physics	intermediate	7:25
Tues.	Arabic	science branch	6:55
	solid geometry	science branch (6th yr.)	7:25
Wed.	English	science branch	6:55
	physics	science branch	7:25
Thurs.	Mathematics	humanities branch	6:55
	botany	science branch	7:25

the new studio is operative, about 1980.

There are heavy concerns regarding the Departments' ability to keep pace with larger school populations, more schools, and the need for larger and larger numbers of TV receivers. By recommendation of the Higher Consultant Committee, more staff is to be added and existing staff are to receive 30 per cent pay raises to compensate for long hours of overtime work which are often required of them. A special budget has been authorized to cover TV repairs. These are recognized as solutions to immediate problems. But long-range problems persist.

One of the most serious constraints in the operation of the facility is the level of expertise available among educational TV personnel.

Although most have had some re-training recently, they have not been educated formally in media work. The director of the agency is a graduate in literature and geography. One producer has a low degree but has also taken a diploma at the International Center for Social Environments. This staff member also has a diploma in educational TV literacy training, as well as having attended workshops conducted by UNESCO in Egypt and in Baghdad. One staff person, an electrical engineer, received training in West Germany, and two video technicians have received high school certificates in electronics. These technicians have also attended workshops and special training programs.

A decor planner is a graduate of the Institute of Fine Arts, and four graphic artists have either certificates or degrees in the same field. Studio directors have similar credentials. A library and laboratory worker is a graduate of the humanities branch of general education. Electricians, carpenters, clerks and equipment managers have less than secondary educations. Obviously, skills available are of minimal sophistication. Although staff morale problems arise from time to time because equipment is insufficient or in need of repair, Department leadership feels that continuous skill training is still the critical factor in internal development.

Other, more external, difficulties have been identified by personnel of the follow-up unit in their impact assessments. Though reception of educational TV programming has been generally positive, there are still a number of weighty issues which they are aware must be resolved.

A particular problem faced by follow-up evaluators themselves is the difficulty of assessing the impact of early evening programming. The audience is known to be large, but there are no assured numbers or systematic means to elicit feedback from these viewers who are watching in homes, clubs or youth centers.

Follow-up studies in day-time programming have thus far indicated greater involvement of students through the TV medium and greater understanding of science concepts as a result of watching experiments on TV. One reason for this is that many schools do not yet have sufficient laboratory equipment to conduct such experiments on site. But teachers have complained that there are not enough lessons, and that not all students can be involved because of the scarcity of receiving sets and the lack of large rooms where students can be gathered to watch. It is obvious that numbers of student viewers per set far exceeds the recommended 16 to 33 students (depending on size of screen and viewing angle).

Earlier studies identified the need for teachers' manuals and revealed the scheduling problems; school sessions did not always coincide with broadcasts, and sometimes frustrating delays were experienced in transmission. Teacher approval of educational TV programming is by no means universal; many view TV presenters as a threat to their own sense of competence or to their attempts to develop rapport with their students. Many are not certain as to the usefulness of the broadcasts and do not know how to capitalize on what has been presented when they return to their classrooms. Some comments have indicated that students would prefer less presentation time and longer discussion periods, and they have also expressed a desire to see students on the videotaped programs.

Educational TV planners are aware that teachers' opinions influence student receptivity. Negative teacher attitudes are therefore considered a major obstacle to optimal use of the mediated lesson materials. Consequently, plans have been laid to supplement conferences and workshops for teachers with more formal training sessions in media use, to be conducted in teacher training colleges and institutes. Teachers are to be assisted in understanding the psychology of mass audiences, the interactive roles of the TV presenters and the classroom teachers, and are to be given instruction in appropriate classroom preparation and follow-up activities which may be used to augment the media instruction.

Conferences have also been utilized to raise the level of awareness of school administrators and inspectors, but hoped-for follow-up in actual school settings has not been successfully implemented.

The Iraqi planners say they would welcome regular conferences in the Arab world concerning the best methods for training educators in media use, the factors involved in areas of special productions, and what recent research findings can be helpful in design of training for educational TV use. For the most part, they remain convinced that TV lessons offer special advantages in developing nations and that problems can be gradually ironed out as their experience with the medium accumulates.

A Look at the Future of Curriculum Development in Iraq

The Center for Educational and Psychological Research, located at Baghdad University, has played a prominent role in the development of curriculum theory and research in Iraq. Members of this R & D (research and development) organization serve frequently as temporary consultants on Ministry committees which are doing curriculum development, testing, and follow-up work. Thus, they have helped to establish scientifically sound procedures and have encouraged the Ministry policy of testing all curriculum changes prior to their general adaption.

Other participants in the curriculum development process are vocational unions and teachers unions. The former send representatives to serve on vocational and industrial school councils, and there are permanent positions on higher committees of the Ministry which are occupied by teachers' union representatives. Parents also voice opinions and make suggestions through parent-teacher associations. Students and teachers are polled concerning curriculum changes and are asked for ideas which can be incorporated in future development acitivities.

Grass roots participation on the information-gathering level is apparently strong, but as yet, this has not meant that curriculum innovations are ever initiated at school level. Such a local initiative may, in fact, be several years in coming, if it is ever realized. Teachers are presently considered lacking in basic skills and therefore not prepared to contribute significantly to the actual process of curriculum preparation.

This state of affairs itself contributes to lack of grass-roots support for curriculum change. Since teachers are perceived primarily as information givers rather than curriculum workers, they are not necessarily motivated to make proposed changes succeed. There is hope that this situation will be altered by improved teacher training and by operationalizing of the concept of the school as a social system. The teacher is viewed as a potential manager of dynamic interactions in the classroom, a professional who can ideally arrange learning so that it meets the social and intellectual needs of all students and changes their behaviors in positive ways.

At a recent seminar at Baghdad University (1975), a UNESCO representative explored with Iraqi educators "The Role of Human Relations in Improving Curriculum." It was suggested that to make any successful changes in curriculum, at school level or at administrative levels, the social interactions of the participants must be considered. Four influences were identified:

1. the resistance to change produced by authoritarian structures and motives which tend to perpetuate the status quo and which discourage change in people's attitudes;
2. the misunderstanding of the objectives of change and/or the feeling of implementers that they may not be sufficiently competent to do what is required to produce the changes desired;
3. resistance to change on the basis of different value positions (this sort of opposition can be won over if it can be demonstrated that new ideas do not necessarily mean a betrayal of accepted values); and
4. the facilitation of change by teachers and administrators who are themselves innovators and who are motivated to improve learning conditions.

The model of change which was recommended was a participation model, involving the formation of curriculum development groups at school level for the dual purpose of creating better informed teaching staffs and providing a humanistic environment for the healthy expression of opinions and ideas. Both purposes were viewed as contributing to the psychological safety and the professional development of the kind of teachers who will be needed to work in the new student-centered, comprehensive schools which Iraq is moving toward.

A corollary assumption is that students themselves must be more frequently consulted and given more freedom of choice, if their creativity and active learning is to be encouraged. Active involvement of students means more than simply soliciting their opinions. Even elementary school children have a right to help design their learning experiences.

The recommendation for greater local involvement is not viewed as contradictory to the principle of centralized educational planning. Advantages of central planning include the possibility of system analysis and comprehensive patterns of curriculum reform. It is recognized by both political and educational leaders that curriculum development to date has been piece-meal and that more holistic research and development is needed. The reorganization of the Ministry to provide for five associated curriculum development units was one step in this direction.

Iraqi educational planners have recognized that there are three interactive elements in the idea of curriculum: the content and context of the subject, the educational environment--which includes the human social environment--and the educational process. Curriculum is not viewed simply as a means to intellectual development. Nor is it imagined as a fixed body of knowledge which is static and unresponsive to change. Because the new curriculum developments are research-based, they are subject to constant revision, and seem likely to be essentially congruent with the real needs of Iraqi citizens for formal and continuing education.

Chapter 5

THE CASE OF KUWAIT

The Gulf State of Kuwait, with more than a million inhabitants, has been consistently interactive with other nations over the past few years in its attempts to modernize educational facilities and curriculum. Among all of the oil-economy Arab nations, Kuwait has had perhaps the earliest and most persistent links to progressive educational communities in the West, perceiving that these and international educational sectors had much to offer developing nations. Financial resources have been more than adequate to begin the translation of modern curriculum trends into new kinds of education for Kuwaitis.

In addition to the outside sources of influence which have caused Kuwait to revise curriculum development practices and encourage educational change, there are conscious attempts within the country to close the gap between centralized curriculum planning and the expression of local school needs. Teachers are routinely invited to have input into the planning process through responses to questionnaires and other kinds of contact, and planners say that 70 percent of their effort in curriculum development is spent on assessment of local needs.

Early in 1974, a committee of Kuwaiti educators met to re-evaluate educational objectives and to re-constitute policy statements on the basis of revisions which might be made in these objectives. The committee was drawn together from among Ministry personnel and also from the Faculty of Education at Kuwait University as well as from teacher training institutes. Care was taken to assure participation of educational psychologists as well as other educational specialists. As expressed by a deputy minister, the goal of the project was not only to define new objectives congruent with the Kuwaiti environment and with modern educational practice, but also to develop a core group of implementers who could translate those objectives dynamically into concrete behavioral events.

Specifically, the membership of the Educational Objectives Committee included: the Directors of the Administrations for Planning and Training, the Director for Technical and Vocational Training, the Director of the Research Center, two chiefs of the Elementary Education branch, two also from the Secondary Education unit, a head of the Preparatory or Intermediate unit, four professors from the University, and a teacher from the Teacher Training Institute for Men.

The committee work began with a review of Constitutional policy statements concerning education.

There were four assumptions which served as the basis for the further deliberations of the committee:

1. that the frame of reference for the objectives should be the dominant philosophy of education in the society;
2. that the nature of the society itself, as perceived by the planners, should be the starting point for the development of educational planning and change strategies, and should provide clues as to the need for, guidelines of, and incentives for change;
3. that educational objectives are never fixed or static, but are instead inherently developmental, subject to review and revision in light of new social and cultural events and in light of new insights as to students'

psychological and intellectual needs; and

4. that objectives are best formulated by those individuals (or representatives of individuals) who will be asked to implement them.

The committee described the nature of Kuwaiti society as Islamic, Arabic, democratic, independent, and as having special demographic, economic and educational circumstances. It was recognized that all of these elements are interrelated and interdependent, and that the educational needs of Kuwaiti citizens can not be met successfully unless all of the variables are taken into account. National industrialization goals, movements toward the modernization of institutions and services, and increasing needs for skilled manpower were viewed as having substantial impact on schools. The psychological stresses of Kuwaitis which are occasioned by the constant collision of traditional and contemporary aspects of the society were cited also as having important educational implications.

The comprehensive approach which these planners took resulted in four categories of objectives, proceeding generally from the four major assumptions that were made about the conceptual framework to be used. These are summarized below because they are indicative of the future directions the Kuwaitis feel their educational system must take.

Objectives Concerning the Nature of Society

1. Islam will be presented as a belief, a moral code, and a way of life with concrete behavioral impact on the self and on interpersonal relationships.
2. The heritage of the Arab world and of Islamic culture

will be preserved through planned educational experiences of Kuwaiti children.

3. The history and development of Kuwaiti society will be emphasized, as a way of producing a sense of national identity and belonging.
4. The values of family life will be supported, and the brotherhood of all races and creeds will be emphasized. Discrimination on the basis of religion, tribe, class or locality will be discouraged.
5. The individual learner will be given citizenship education in preparation for his participation in democratic process and government by consent. The freedom and dignity of the individual will be presented as related to the welfare of society. Kuwaiti students should be encouraged to work effectively in groups, to represent their own points of view independently and courageously, and to respect opposing views. The young citizen will be informed not only of his rights, but also of his obligations to his society.
6. Kuwaiti students will be given the opportunity to develop the ability to think scientifically, and to exercise their individual creativity. They will be encouraged to aspire, and to achieve all that they can within the limits of their abilities.
7. Individual differences will be taken into account. The gifted will be identified and prepared to assume leadership in various fields, and disadvantaged and

handicapped children will be given special educational assistance to prepare them to enter the work world and the life of society generally.

8. Independent decision-making will be valued, and the new generation will be asked to reject the temptation to live easy and unproductive lives. They will be encouraged in social responsibility and habits of industriousness and self-sacrifice.
9. The new emphasis on Arab unity will be used to provide incentive for the responsible use of Kuwaits' material wealth. Students will be asked to face the challenge of development and integration of the whole Arab world, as well as to work for international cooperation and peace.

Objectives Concerning the Nature of Modern Life

1. The existing scientific and technical developments, the knowledge explosion, and the consequences of these will be faced openly. The changes in society produced by mass communication will be noted, and the rapid applications of new knowledge exemplified.
2. Students will be apprised of the threat to humanity which materialistic attitudes and selfishness pose, and will be confronted with the necessity of improving their own skills and potential usefulness as agents of social change, social justice, and human concern for others. The importance of keeping material and spiritual goals in balance will be

emphasized.

3. Specialization will be recognized as an integral part of knowledge acquisition and knowledge production in the present century. Students will be encouraged to bridge the discrepancies between theory and practice; between thinking and acting.
4. The new generation will be taught to protect themselves from propaganda and the pressures of special interest groups which may not represent the best interests of Kuwait or Kuwaiti citizens.
5. In summary, these objectives are aimed at preparation for life in a broad and comprehensive sense.

Objectives Concerning the Developmental Characteristics of Students

1. The educational system will seek to identify and take into account the developmental tasks of students as appropriate for each age level. The physical, mental, psychological, social and spiritual maturity of each learner will be considered, as well as the educational methodologies which are best suited for facilitating his future growth.
2. Research in child development generally must be supplemented by research in development of the Arab child, and even more specifically, of the Kuwaiti child, to insure that educational planning is relevant to his development needs.

3. The child will be encouraged to act out of Islamic values and to demonstrate an interest in good manners, good health, and the achievement of emotional maturity.
4. Aesthetic appreciation and creativity will be fostered; problem-solving abilities will be developed; and students will be encouraged in appropriate professions and vocations.
5. A serious regard for family life will itself promote education in social responsibility for population planning.
6. Educators will also be concerned to develop students' abilities to use their leisure time constructively.

Objectives Concerning Current Educational Approaches

1. Education will be viewed as a life-long process, and separate stages of education will be planned for as parts of a continuum. Different and flexible opportunities will be developed for each stage, as necessary to help youth and older citizens stay abreast of new developments and new knowledge.
2. The first objective implies also that educators must work to develop the willingness and capability of students to take charge of their own learning, i.e., to learn independently and autonomously throughout their lives.
3. Another new goal is to make use of community resources and organizations as a means of demonstrating

to students the relationships between schooling and society.

4. The use of modern technology and modern teaching methodologies will be viewed as critical in the implementation of all other objectives.
5. Students will be encouraged toward actualizing their individual potential in a world where specialized knowledge and skills must be reintegrated in positive and creative ways.

The stated objectives are sufficiently sophisticated as to provide a thorough rational for the development of comprehensive schools in Kuwait. In fact, that is the trend, as recent reforms at the secondary level of schooling clearly indicate. Beyond intermediate education, there are well-defined efforts to introduce the credit system of course work which is a hallmark of comprehensive education, and to add a wider range of academic offerings to meet individual interests and needs.

The newly specified objectives have been studied and approved by Ministry administrators, subject matter supervisors, faculties in education and psychology, and teachers in the male and female teacher training institutes and have been in effect since 1976. They have been given considerable prominence in this case study because, though they frankly reflect the influence of the U.S. and Swedish postures toward comprehensive education, they also preserve the integrity of Islam, the Arab world, and Kuwait itself.

From the attention which has been paid to the emerging social problems of Kuwait society in the statement of educational objectives, it is apparent that the nation's top educators are aware of the deep contrasts and transitions in values which are present. They are equally aware of their responsibility to forge new educational vehicles for developing citizen awareness and social commitment.

Financing the Schools

The latest figures for Kuwaits' current and capital educational expenditures, as reported in the UNESCO Statistical Yearbook, are for 1974. In that year, 84,628 thousands of dinar* were invested in education, but this total represents only 14.7 percent of all public expenditures. For the years 1965 and 1973, educational spending represented 2.8 percent of the gross national product (GNP), though this percentage rose briefly in 1970. Prior to 1974, operating costs were far in excess of capital expenditures, but in that year, capital spending jumped from 2,196 to 10,355 thousands of dinar. Other changes between 1965 and 1974 can be read from Table 14.

By level, elementary education in Kuwait consistently receives the highest allocation. Table 15 shows that second level education (general education and teacher training) between the years 1965 and 1974 received from roughly 18 to 21 percent of educational monies. Third level expenditures average about 10 percent of the total budget. Total expenditures increased more than four-fold during the '65 - '74 period.

School Enrollments

Pre-primary enrollments rose from 9,759 to 19,863 between 1965 and 1973, students in first level education more than doubled, and in one three year period alone (1970-73), third level enrollments went from

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*The Kuwaiti dinar converts to $3.90, U.S. currency.

Table 14 : Total Public and Current Expenditre and Capital Expenditure (in thousands); Percentage of GNP; and % of all Public Expenditure: Kuwait

year	total expenditure (in dinar)	current expenditure (amount)	current expenditure (as % of total)	capital expenditure	total as % of GNP	total as % of all public expenditure
1965*	16,771	16,639	99.2	132	2.8	6.9
1970	35,832	34,630	96.6	1,202	3.9	11.8
1973	58,558	56,362	96.2	2,196	2.8	13.0
1974	84,628	74,273	87.8	10,355	--	14.7

* Expenditure of the Ministry of Education only
Source: UNESCO Statistical Yearbook, UNESCO Paris, 1976, p. 383.

Table 15 : Estimated Public Expenditure on Education in Kuwait (in thousands) and Percentages by Level

year	total in dinar	first level[1]	second level[2]	third level	other types of education[3]	expenditures not allocated by level
1965*	16,639	43.8	19.1	--	3.2	33.9
1972	48,808	56.5	20.9	11.2	3.4	7.9
1973	56,362	55.6	20.8	9.1	3.7	10.8
1974	74,273	56.3	17.8	10.2	4.3	11.4

*Expenditure of the Ministry of Education

1 includes preschool and primary

2 includes general, teacher training

3 includes special education, adult education and similar institutions

Source: UNESCO Statistical Yearbook, UNESCO Paris, 1976, p. 410.

2,686 to 5,303. The average teacher to pupil ratio at the first level was one to 20. Numbers of teachers rose in steps, with no dramatic increases in any single year. In 1973, the last year recorded in Table 16, the number of teachers at all levels totalled 14,306 , serving a total of 209,648 students.

Table 16 : Number of Pupils and Teaching Staff on the Three Levels of Education in Kuwait

year		no. of pupils	no. of teaching staff	pupil/teacher ratio
Pre-primary education	1965*	9,759	477	1:20
	1970	19,273	1,022	1:18
	1972	19,281	1,170	1:16
	1973	19,863	1,218	1:16
First level	1965*	49,562	2,316	1:21
	1970	75,513	3,555	1:21
	1972	88,299	4,580	1:19
	1973	94,039	5,053	1:19
Second level	1965	31,980	2,140	1:15
	1970	70,734	5,476	1:13
	1972	84,935	7,041	1:12
	1973	90,443	7,636	1:12
Third level	1965	--	--	--
	1970	2,686	244	1:11
	1972	4,310	291	1:15
	1973	5,303	399	1:13

* Public education only

Source : UNESCO Statistical Yearbook, UNESCO Paris, 1976, pp. 128, 145, 192, 248.

Curriculum Development Structures in Kuwait and Their Primary Functions

Within the Ministry of Education, there is a permanent Higher Committee for Curriculum which has the macro level of responsibility for identifying curricular problems and coordinating attempts to overcome them. This committee has a regular membership of 22 persons, consisting of deputy ministers, directors of all administrative units, representatives from the University of Kuwait, and supervisors, school administrators and teachers with particular subject-matter expertise. Included also is the Director of the Center of Research for Curriculum. Educational planning, curriculum, budgeting, and teacher training decision-makers are all represented. This Committee and related curriculum development units are shown in Figure 4.

Once the outlines of a particular curriculum problem have been described, a General Committee is formed to conduct a more thorough analysis of the problem situation and to identify factors which are contributing to it. This general committee, though accountable to the Higher Committee, is operationally the unit which performs the curriculum development work. The functions of the General Committee have planning, supervisory, and evaluative aspects; in fact, the group specifies all of the elements and events which will be necessary to accomplish a curriculum change. Teacher training and its design, development of model or demonstration lessons, modification of school buildings or their use, and preparation of audio-visual aids and other educational media are all matters which the group considers. These considerations are translated into program planning which includes the development of a timetable for new curriculum implementation and the simultaneous development of materials and new procedures for their use. The supervision

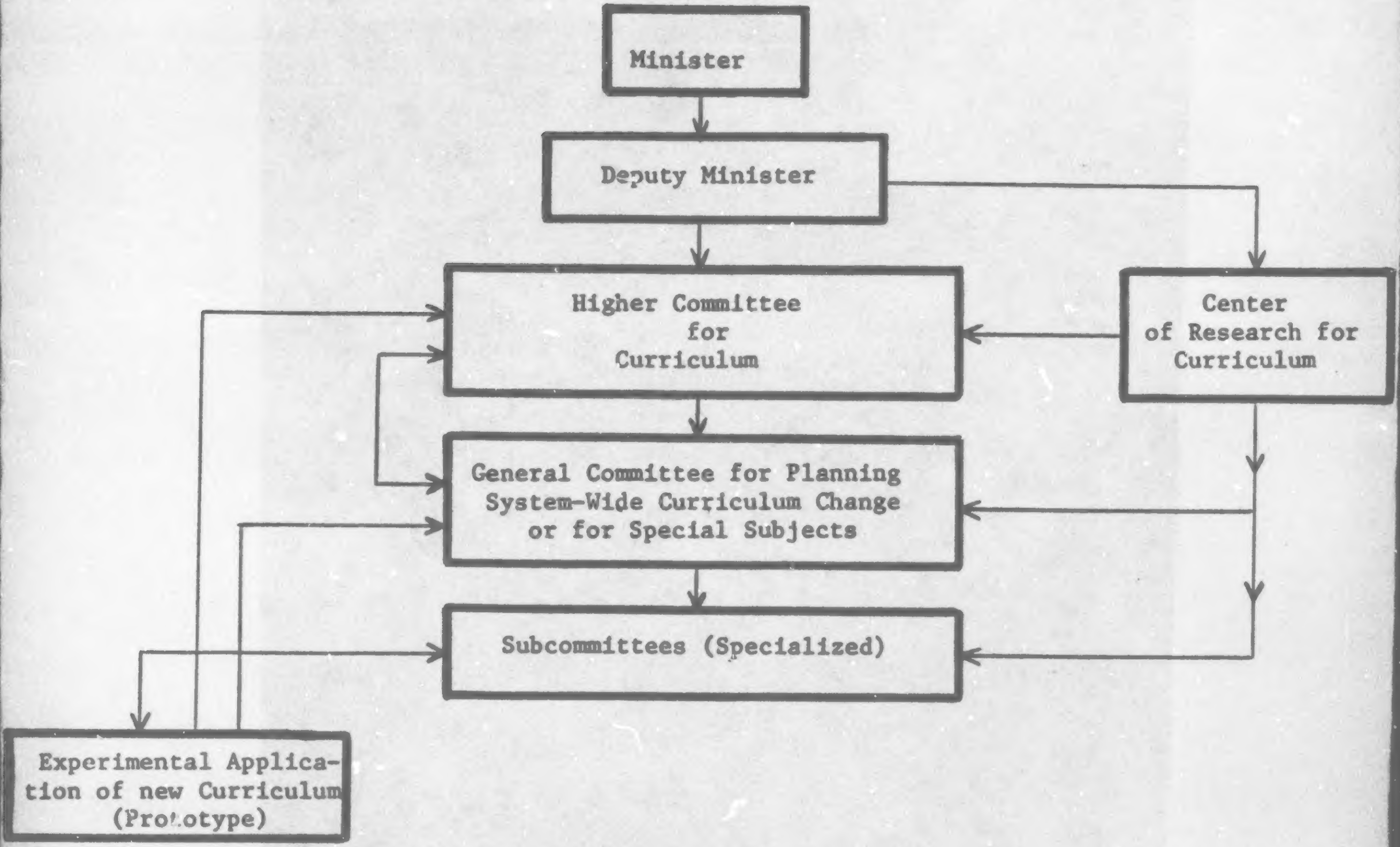

Minister
Deputy Minister
Higher Committee for Curriculum
Center of Research for Curriculum
General Committee for Planning System-Wide Curriculum Change or for Special Subjects
Subcommittees (Specialized)
Experimental Application of new Curriculum (Prototype)

Figure 4: Functional Curriculum Development Structures, Kuwait.

Source: Interviews and Ministry of Education in Kuwait, 1978.

and evaluation aspects of the committee's work have three dimensions : trial and testing of experimental curriculum and texts, appropriate teacher training and the assessment of its effectiveness, and evaluation of student achievement vis á vis the new curriculum. There are four types of processes by which evaluation occurs : observation, interviews, use of questionnaires, and self-evaluation. These general development and evaluation committees meet on a weekly basis throughout the year.

Since the variety and extent of activities for which the general committee is responsible precludes the possibility of performing every task itself, subcommittees are formed. These are specialized according to the nature of the tasks assigned. A subcommittee may consist of educational and curriculum specialists, supervisors, and teachers. Such a group may have the responsibility for prototype implementation in one or a few schools. Other committees may branch from the special subcommittees: e.g., a follow-up procedure may be suggested by them and certain of their membership assigned to work together to accomplish this follow-up. The special curriculum development subcommittes are responsible for school visitations and interviews, for the conducting of general meetings to assess local views on the innovations, and for reporting annually the progress of the experiment and making recommendations for revisions, deletions or additions prior to generalization of the curriculum to all schools.

In summary, the steps which are taken and the groups responsible for each step in curriculum development are as follows:

1. Problem identification and presentation - Higher Committee
2. Analysis of the problem in depth and preparation of proposals for solution - General Committee

3. Preparation of working papers : specific outlines of what is to be done and how, what progress is being made, and what solutions have proved successful in other countries - Specialized Committee

Research findings reported by the Center of Research for Curriculum Development are submitted to the Specialized Committee to aid it in its work.

Persons interviewed stated that the most important part of the Kuwaiti curriculum development process is the human element. The purpose of curriculum change is to change behavior according to the ideal national goals of education and according to the specified intellectual, social and physical developmental objectives which should be reached by every child.

There are standing committees in the Ministry for long and short range curriculum planning in specific subject areas : e.g., Arabic language, Islamic religion, English and French languages, mathematics, sciences and social sciences. These committees operate in much the same way as the general committees which are formed in special circumstances; that is, they study critical problems in curriculum content, in texts, and in teacher training for subject-matter specialties.

The Role of the Center of Research for Curriculum

The Center of Research for Curriculum has designated units which cover each of the above subject areas, and also has a library and documents section and a school activities and audio-visual aids units. The foreign language section presently has a dual responsibility. It has been assigned the task of researching kindergarten curriculum problems.

During 1978-79, the Center expects to add four new units, for research on (1) information, (2) evaluation and measurement, (3) planning and budgeting for education, and (4) elimination of illiteracy.

Research problems are referred to the Center most often by a general committee, but they may also be specified in reports from educators and specialists in the field. Since the Center is located administratively within the Ministry itself, there is a close working relationship between it and the curriculum and textbook committees. In a 1976 report, the Center listed its particular functions as:

1. Conducting studies on problems referred by Ministry personnel and educators in the field;
2. Developing curriculum support materials and designing new teacher training programs as rapidly as possible (including textbooks); and
3. Planning both short range and long range development procedures for all educational levels and in all fields.

The Center views the developmental process as both difficult and time consuming, but it is committed to the experimental approach and to the democratic involvement of all levels of personnel in the development tasks. In 1974-75, three pioneer studies were conducted for the purpose of evaluating the existing curriculum and curriculum practices in elementary, intermediate and secondary levels of education. The researchers used a variety of inputs from parents, students, teachers and administrators, and conducted direct observations of classroom activities as well as detailed analysis of textbooks. It was felt that collecting data from as wide a variety of sources as possible would provide the best information about what curriculum elements were satisfactory and which were in need of revision or replacement. The Center sought to interpret the data in light of the newly specified educational objectives for Kuwait and with reference to contemporary scientific approaches to educational reform. A clearer insight into how objectives could realistically become translated into educational content and practice seemed necessary. Further, the researchers felt they must begin to provide more realistic measures of a range of student learning accomplishments. Subsequent to completion of these preliminary investigations, the Center established a consulting committee to work cooperatively within its own boundaries but also to include subject matter specialists and educational practitioners in the field. Proposals for change would be generated by this consultant group.

As a general policy, the Center proposed that all curriculum changes should be based on the following principles:

1. Any curriculum for any subject should be developed as a continuum from elementary through secondary cycles, and should be sequenced as appropriate for each level within that continuum. Curriculum should also be coordinated with that of other subjects in the same grade, so that both vertical and horizontal integration of curriculum is achieved.
2. The Center should assist general committees in constituting subcommittees and should provide guidelines for textbook writing and revision which reflect modern approaches. Particular care should be taken to insure that individual differences of students are taken into account and that traditional ideas of accumulated fact-learning and memor-

ization do not dominate the textbook development process.

3. Analysis of needed audio-visual components, equipment, and facilities should be made, in preparation for curriculum change and as a means of accomplishing the objectives of the curriculum.
4. Teachers must be trained to implement the innovations.
5. New curriculum should be experimentally implemented in sample schools or classes before generalization.
6. Generalization itself should not be considered a final step, because curriculum development is a continuous process. The changing world continuously makes new demands on society, on students, and on developmental processes. But some degree of curriculum stability is also necessary, in order that it can be perceived to have a form, with definite attributes that can be evaluated.

The time frame for specific developments depends on resources available both within the Ministry and the Center itself. There is often a felt need to increase the numbers of qualified personnel to work on particular projects. But even with these constraints in human resources, Center researchers are convinced that the continuity and concentration of effort which they are able to make as a permanent unit gives them a capability for research and development which is potentially far beyond that of the old ad hoc curriculum committee structures. Having this greater organizational stability and scope, Center personnel have worked closely with the traditional committees to provide the scientific expertise needed for comprehensive planning and follow-up work.

Their role has been to encourage and help to perform the foundation studies needed for large scale, integrated curriculum reform.

During 1974-75, their investigations concentrated on Arabic language and social studies, and by the end of that academic year, the Center was able to make important recommendations for curriculum modifications in both fields. In the succeeding year, the focus turned to math and science. Results of these four research and development projects were a series of curriculum innovations which were scheduled for trial experimentally in a limited number of schools in 1977-78. Following comprehensive study of the outcomes of these trials, generalization of the innovations to other schools could proceed.

Center leadership is deeply concerned to present curriculum development as a holistic process with a great many interrelated subordinate processes and conceptual elements. For example, there is recognition that the envisioned new comprehensive schools will not be well planned if simply instituted by decree, and that modifications, small or large, should be gradually introduced and formatively evaluated for their effectiveness in producing good learning environments and teacher/pupil satisfaction and achievement. Though changes in curriculum often imply changes in school facilities, Kuwaiti researchers are insistent that new curriculum field trials need not depend on the construction of ideal schools and physical facilities. They can be made immediately in existing schools, and revisions can go forward even as new schools are built and old ones remodeled to accomodate the requirements of modern education.

The Center of Research for Curriculum Development is making every effort to maintain linkages with curriculum developers in other Arab countries, as a means of planning cooperatively and promoting Arab unity through educational process. There is a commitment to encouraging the formation of other Arab-world research and development centers and to the creation of information and exchange networks among these centers.

Specific Research Interests of the Center

In its 1976 report, the Center named several areas of immediate concern which it was currently addressing and which have remained of paramount importance. Among these was the problem of acquisition of adequate Arabic language skills and the recognition that language disabilities were present in all of the school cycles. Examining the way language was taught researchers came to the conclusion that the study of Arabic was fragmented into grammar, composition, etc. and not presented as a functional, integrated entity. Further, the language was taught in isolation from other subjects, so that language skill development was confined to one period only, rather than threaded throughout other course work.

Though classical Arabic, the language of the Qur'An, might be considered strange and irrelevant to today's students, in light of their greater familiarity with colloquial Arabic, nevertheless Kuwaiti educators see important reasons for its continuance as the language of Islam and the language of scholars. The solutions suggested by the researchers were modernization of teaching method and greater emphasis on use of classical Arabic language skills in all subjects taken in school.

A second vital concern is for revolutionizing the concepts of evaluation, whether of curriculum materials and processes or of student achievement. The Center immediately sought and continues to seek a more widespread and critical awareness of the formative uses of evaluation.

Differentiations are made between "evaluation" and "examination" because the traditional emphasis on recall in examinations may actually prevent the comprehensive analysis of student progress which evaluation implies.

On the basis of scientific evidence that fact-learning does not necessarily lead to good judgment and creative thought processes, Center reserachers are attempting to redesign evaluation criteria and measureemnt instruments to reflect the learning of processes as well as of content. The student's conceptual grasp of issues and of investigation or problem-solution methods must be tested. Examinations based on recall alone do not provide enough information (or necessarily the most pertinent information) about the skills, knowledge and attitudes each student is developing. One recommendation emerging from the Center's struggle with the modern evaluation concept was for the elimination of the final national examination for the intermediate certificate and the substitution of formative measurement activities on the part of all school personnel. The formative testing should be used solely to diagnose weaknesses and strengths, to provide feedback to the student about his own progress, and to give teachers information about additional practice or revised lesson planning which might be needed.

A third issue which is a continuing preoccupation of the Center is school staff development. Teachers and administrators are viewed as crucial to the implementation of new curriculum and new teaching and evaluation methods, and the Center works with teacher training and education faculties to institute appropriate training programs.

School scheduling has also come under Center scrutiny, and recommendations have been made for extension of the length of school periods to 50 minutes, separated by ten minute breaks between classes. Activity periods were suggested, to enable students to socialize and enjoy recreation, and it was also recommended that teachers should be given time during the day for planning and class preparation. Reductions in class size were also proposed, and in some cases, reductions in numbers of subjects that students may take were indicated.

The Center recognizes that several constraints are operating against rapid and effective implementation of curriculum change. The greatest source of resistance is human nature, for people like what is familiar and often view change processes as personally threatening. Attempts have been made to overcome this resistance through the encouragement of more active participation of educators working in the schools. Without such participation, understanding of and commitment to the changes is viewed as doubtful. Other constraints are imposed by the lag in modernization of teacher training and the lag in public awareness and sophistication regarding what is happening and what is at stake. The latter has been manifested in the form of parental concern over experimental procedures and how such school experimentation might affect their own children.

In summary, the leadership of the Center is committed to the development of curriculum *as process*, not as a mechanical series of productions which are discrete and unrelated. To arrive at this commitment, there has been an adoption of the philosophy of education which views learning itself as process. The Center is significantly responsible for the coordination of all of the events which contribute to the scientific process of curriculum change and development as it is defined in this new conceptual framework. The Center takes a whole-system point of view and is quite frankly utilizing the modern systems approach to the integral acts of specification of objectives, coordinated curriculum planning, development of teaching strategies and training of teachers to use them, development of instructional tools and texts, and devising of evaluation schemes. The broad systems frame of reference and the coordinating responsibility clearly separates the work of the Center from that of the narrowly focused subject matter committees. Within the Center there is continuous debate and dialogue, and the development process is viewed as open-ended and on-going.

The Center has accepted the challenge to redirect the educational systems and to foster new attitudes among Kuwaiti youth toward scientific thinking, skill development, and subsequent performance in useful occupations. One movement which appears fruitful for accomplishing these serious objectives is the development of horizontally and vertically integrated curriculum over the educational span from pre-school to high school graduation. Kuwaiti educators are preparing now to introduce the course credit system at the secondary level, as a major vehicle for initiating such curriculum integration and diversification.

Steps Toward The Development of a Comprehensive Secondary School System In Kuwait

Many of the projects of the Center of Research for Curriculum Development, while designed for immediate usefulness, have been aimed at the larger goal of conversion to a comprehensive secondary school educational system. Even the establishment of integrated study units in the elementary grades has been a preparation for the establishment of the course credit system and subject distributions which are characteristic of comprehensive schools in other countries, e.g., the United States and Sweden.

The study of existing examination structures and the proposal to eliminate the preparatory school certificate were also ground-breaking activities. To the same end, science curriculum development has been oriented toward elimination of overlap and coordination of topics over the whole range of science subjects. Attempts have been made to increase the students' commitment to the study of science, so that separate branches in general education would begin to be balanced and eventually to merge within a single comprehensive school structure.

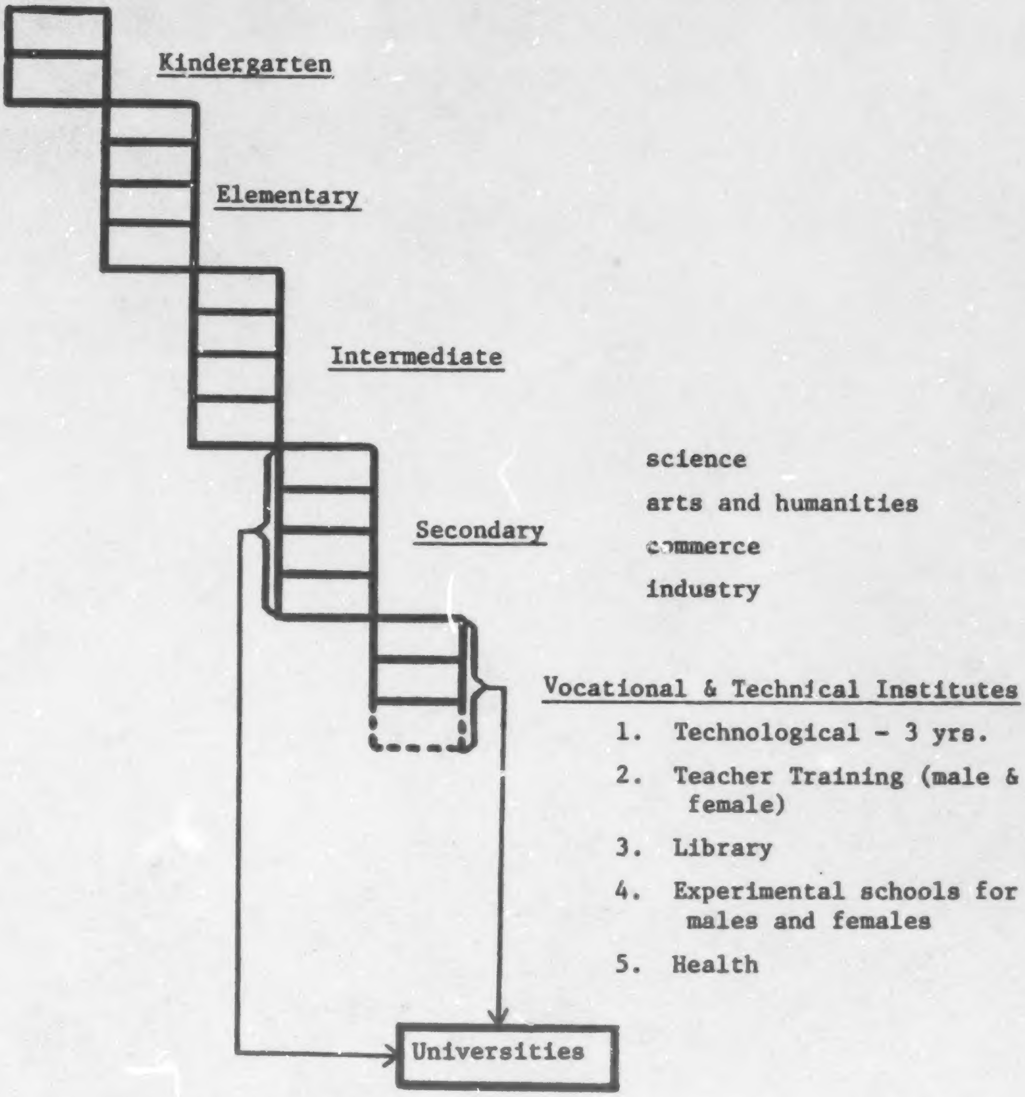
The present organization of school cycles is illustrated in Figure 5. It should be understood, however, that proposed modifications will blur the boundaries between preparatory and secondary cycles and begin the development of the integrated comprehensive system.

A coherent rational for the proposed change-over to the new system has been carefully developed. In a "Study on Implementation of the Credit System in the Secondary School" prepared and presented by personnel of the Center of Research for Curriculum in October, 1976, accumulation over the past few years of serious problems in intermediate and secondary schooling was cited as a compelling factor in the decision to study alternative systems. Though not referred to specifically in this 1976 report, problems of student and teacher morale and problems of relatively low academic standards have been persistently implicated in the clamor for Kuwaiti curriculum reform.

The objectives of the study on which the report was based were to explore the credit system concept--its philosophical foundations, assumed objectives, and practical applications--and to investigate the feasibility of its implementation in Kuwait.

Despite slight variations from nation to nation, course credit systems have several common characteristics: they permit students to make choices among course alternatives and they provide guidance to the student in the selection process so that he will be properly advised

Figure 5: Current Organization of Educational Cycles in Kuwait


Kindergarten
Elementary
Intermediate
Secondary
science
arts and humanities
commerce
industry
Vocational & Technical Institutes
1. Technological - 3 yrs.
2. Teacher Training (male & female)
3. Library
4. Experimental schools for males and females
5. Health
Universities

Source: Interview and Ministry chart, Kuwait, 1978

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academically and not be unduly influenced by biases of parents, peers, or public opinion.

At the secondary level, course credit systems also imply a core of basic studies which every student is required to complete, but this core is greatly reduced from the obligatory, cumulative curriculum demands placed on today's Kuwaiti student. Even after a student is scheduled for all required courses, there is still a range of electives open to him. Required courses are patterned and sequenced so that students complete units and clusters of subjects within a given field.

The initial push for the comprehensive reform of the secondary cycle came with a Ministry decision to establish the study committee. This primary committee was headed by the Deputy Minister for Planning and Cultural Affairs, and was composed of both Ministry personnel and faculty from the University of Kuwait. The Ministry was represented by the directors of three units: Secondary Education, Examinations and Student Affairs, and Technical and Vocational Education. The Director of the Center of Research for Curriculum, also a University professor, sat on this committee along with the Dean of the College of Commerce, Economics and Political Science and the Chairman of the Department of Statistics and Insurance in the same College. Later additions were made to this membership roster: two directors of secondary schools for boys, the Director of the Religious Institute, and a technical expert in English from the foreign language section of the Center of Research for Curriculum.

The primary committee met 17 times between September 26, 1976 and March 31, 1977, for a total of 47 hours. During the eleventh session, heads of standing curriculum development committees in the Ministry also participated. An auxiliary meeting, not counted in the total above, was held in February, 1977, to familiarize subject matter inspectors with details of the study and to discuss possible implications.

Subcommittees worked diligently also in the following areas:

(1) preparation of a proposal for implementing the credit system in experimental schools, (2) preparation of a final report of all committee work, and (3) analyzing of research and other documents relating to the study. The first two tasks consumed a total of 31 hours of meeting time, in addition to the preparations which individual members made in advance of each meeting. Three persons, all at the Ph.D. level, worked on the first project and six persons prepared the materials for the final report.

The volume of reports and documents which were investigated was substantial, and included reviews of recent trends in secondary education in Kuwait as well as abroad. Field visits were made to Saudi Arabia, and relevant UNESCO documents were translated and considered. The curriculum of the American school in Kuwait was studied, together with reports from various subject-matter and special sections in the Center for Research and from regular Ministry subject-matter curriculum committees and inspectors.

The first task of the planners was to evaluate the existing secondary school cycle and its curricular strengths and weaknesses. This evaluation was based on reports of the Center for Research, direct observations of the school situation, and secondary texts.

Several major obstacles to the realistic achievement of educational goals for these levels of schooling were identified. It was felt that current curriculum emphasis is placed on factual details, without a corresponding emphasis on the student's intellectual grasp of contents or awareness of possible applications of those concepts. The texts were found to be lacking in relatedness to the students' life, and the school day was perceived as both too rigidly scheduled and too short to allow students time for social interactions and extra-curricular activities. Essentially, the existing schools were assessed as one-dimensional, geared entirely toward entrance to the University.

Given the functional limitations of Kuwaiti schools as described in the first part of the study, the committee next set itself the task of specifying what the intermediate and secondary schools should be like and what they should accomplish. As new objectives were written, the shift toward more comprehensive preparation of students for pursuit of life occupations, for citizenship, for critical thinking, decision-making, and independent learning, and for understanding modern science and technology was accomplished in theory. Further, a foundation was laid for actualizing the change-over in fact. The concept of integrated secondary education seemed naturally congruent with the hopes which Kuwaiti educators expressed for the future of their schools and their youth. It was assumed that no conflict should exist between the provision for greater individualization and greater freedom of choice in the schools, and the best interests of society as a whole.

Having clarified the philosophical issues, the committee proceeded to review specific alternatives to changing the intermediate and secondary school systems. All proposals for change had to meet the criteria spelled out in Kuwait's revised educational policies and school regulations.

The alternative possibilities were to:

1. keep the current system essentially intact, with limited innovations;
2. keep the curriculum unchanged, but divide the year into two semesters; and
3. begin conversion to the integrated high school model, with all future modifications of curriculum to be oriented

toward this goal.

After the site visits to Saudi Arabia and the American school in Kuwait, and armed with study documents prepared by the Center for Research in Curriculum, the primary committee selected the third alternative.

The next step in the planning process was to establish ground rules for new alignment of courses, distribution of required and elective subjects, class scheduling, and assignment of unitary credits. It was decided that the pattern of core course offerings should be pyramidal, with most of them scheduled early in a students' secondary years and conceived of as a broad base on which to build later specializations.

The proposed distribution over the whole period of comprehensive secondary education called for these emphases:

57.5%	common core studies
15 %	free electives
20 %	courses in field of specialization
7.5%	complementary subjects

The cycle for each student would conclude with a selection of a career or vocational specialization which he might expect to pursue in higher education. Suggested contact hours per week per student were 25 in each of the eight semesters. Total contact hours over the whole secondary cycle would be a minimum of 3,000 hours.

Classes for required subjects would meet three to five times per week, with the first type earning one-half a "study unit" (Carnegie unit) and the latter, one full unit. Each academic semester would consist of 15 weeks, with an additional week for examinations.

Successful completion of 40 units of study would be sufficient for high school graduation, provided that these units were distributed as follows:

Required subjects	23 units
Specializations	8 units
Complementary subjects	3 units
Electives	6 units
Total	40 units

It was further suggested that the 23 units of required subjects should include four units each of Arabic language, English language and physical education; two units each of Islamic religion, mathematics, science, and social studies; and one unit each of commercial and industrial subjects and library. The proposed eight hours of specialization would require one unit each in more advanced Islamic religion, language, social studies, mathematics, science, commerce and industrial course work.

A sample eight-semester course distribution for one student is shown in Table 17. This should be viewed as a model only; other students' distributions would be differently arranged to meet their individual needs and interests.

Creating New Curriculum

As soon as the basic, integrated course credit structure was agreed upon, the planning focus turned to the analysis of conditions necessary for its successful implementation in the schools. Foremost, of course, was the matter of revising course descriptions, syllabi, texts, and methodologies to achieve the selected goals and to fit the new scheduling pattern. This phase of the curriculum development was turned over to the standing subject-matter committees, where these existed. Several new committees were formed to develop plans for commercial and industrial subjects, library science and research, physical education, music and

Table 17: Sample Distribution of Courses Over Eight Semesters

credit courses	units each semester 1	2	3	4	5	6	7	8	total units
Arabic language	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	4
Physical education	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	4
Islamic religion	1/2		1/2		1/2		1/2		2
English language	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	4
Mathematics	1	1							2
Science	1	1							2
Social sciences		1	1	1					3
Commercial or industrial subjects	1	1							2
Complementary subjects				1	1	1			3
Library			1						1
Specialization			1	1	1	1	2	2	8
Electives				1	1	1	1	1	5
Total units per semester	5	$5^{1/2}$	5	$5^{1/2}$	5	$4^{1/2}$	5	$4^{1/2}$	40
Total hours per week	27	29	27	29	27	24	27	24	
Total no. of courses	7	7	7	7	7	6	6	5	

Source: "The Final Report on the First Stage of the Committee Activities, Committee for Study of Regulations and Requirements of the Secondary Cycle," Ministry of Education. Kuwait, 1977, p. 17.

art education, home economics, practical studies, audio-visual aids production, school activities, health education, and national education aspects of the proposed curriculum.

All of these committees, whether long established or newly formed, were charged with four major tasks:

1. to re-organize content in the field of the committee's concern to fit the framework and to carry out the philosophy of the integrated, comprehensive school system;
2. to specify texts, and as needed, methods of text preparation;
3. to supervise the process of preparing texts and other materials, and
4. to specify equipment needs and audio-visual aids to be made or purchased and library materials to be ordered.

To facilitate the work of these committees, formation of a special coordinating committee was proposed. The duties of this group were to call regular meetings of all of the curriculum committees, to coordinate their separate activities and monitor their progress, and to report back to the primary committee on educational policy.

Several dimensions of curriculum development and support were given further attention and specification. Textbook and media committees were given the following guidelines : (1) Each committee should be responsible for one field of specialization only and should include two Kuwait University faculty members, one subject-matter supervisor, a member of the Center of Research for Curriculum, and two teachers; (2) Texts should be accompanied by a teacher's manual and a student manual, and each syllabus should have an independent text; (3) Text writers should take great care to see that content is relevant, conceptually well sequenced, and integrated, so that there is overall consistency and harmony of presentation; (4) Each text should include examples of test questions, and at the end, a sample of evaluation questions from all units in the text; (5) Texts should be both scientifically sound and technically accurate; and (6) Itemized lists of media and media equipment should be carefully prepared.

The Library sub-committee was constituted of personnel from the Kuwait University Library, from the administration for libraries in the Ministry, and from the unit for libraries and documents of the Research Center. This group was charged wtih the development of a system for equipping school libraries with supplemental books and references necessary to provide additional resources for study of the new curriculum. Each curriculum committee was asked to supply the Library planners with lists of such auxiliary texts and references. Guidelines for establishing libraries were as follows: (1) The library should have ample space and adequate budget support. Large, comfortable reading rooms should be available, and accessibility during evening hours should be provided for. Library services, such as typing and xeroxing, should be provided at nominal fees. Use restrictions should be kept at a minimum, to encourage the students' reliance on the library and to develop positive attitudes toward recreational and research readings.

The preparation or procurement of audio-visual and laboratory aids and equipment and the arrangement of facilities for their use were responsibilities assigned to another special committee. The group was composed of a media specialist from Kuwait University, a representative of the audio-visual aids unit in the Ministry, and the head of the AVA unit in the Research Center. The proposed experimental school was the target of this committee's efforts; the goal was to equip this school with a complete audio-visual aids laboratory, to experiment with its capabilities for improving instruction, and to make recommendations concerning generalizations to other schools.

School activities requirements were the special concern of yet another committee, which was assigned the task of planning extra-curricular activity areas and equipment and recreational facilities. These planners should take into account such matters as the need for student club rooms, a projection room, a music hall, and a cafeteria, all to be open to students at hours coinciding with the school library schedule. Workshops for applied sciences like electronics and auto mechanics should also be provided for.

The committee on evaluation and examinations was asked to develop formative evaluation techniques, so that examinations would provide positive guidance and enable both student and teacher to assess the student's progress and further capabilities realistically. It was recommended that a special unit for tests and measurements should be created within the Ministry, Administration of Exams and Student Affairs. The committee itself would accept responsibility for setting up the new examination procedures in the experimental school, evaluating their impact, and making recommendations for the future. The special project group responsible for planning of the experimental school was to provide the evaluation and examinations committee with specific guidelines to fit the new credit system and integrated curriculum examination situation.

A final curriculum-specific committee was made responsible for the development of a new guidance system. Caution was taken to differentiate between the guidance and supervision functions. Supervision has traditionally had disciplinary and behavior-control connotations, while guidance implies academic advisement and problem-oriented counseling. The new field of guidance requires the services of specially trained personnel who have also had supervised experience in the field. It was determined that three types of personnel were needed in the comprehensive school setting : an academic advisor or guidance counselor, a career counselor, and a counselor for social or psychological problems. All of these together would form the guidance component of the new school system.

Specification of Resource Needs

A number of categories of human and material resources were identified as important variables in the systems plan for the experimental comprehensive secondary school. As conceptualized by the planners, human resources should include not only teachers, administrators, and students, but also a school advisory committee. Material resources to be considered were a new school building with all necessary equipment and facilities, various instructional and promotional materials, and adequate funding to make the objectives for the school realizable.

The selection of school personnel was considered crucial, especially in view of the fact that this experimental school staff would be expected to train other school administrators and teachers after they were themselves sufficiently familiar with the new system. Criteria for selection were several years of experience as teachers or administrators, records of outstanding performance in their previous jobs, and high educational qualifications. Preferably, persons would be selected who already had some experience with comprehensive schooling and who had extensive training in educational theory and practice. Personality characteristics would also be taken into account in employment interviews.

Pre-service training of selected teachers, according to the recommendation of the primary planning committee, would be jointly designed by the appropriate Kuwaiti planners and representatives from the American University in Cairo. Training should have both international and local phases. In the international phase, selected teachers would be familiarized with the philosophy, objectives, concepts, and processes of the comprehensive school. These preliminary sessions would require the cooperation of the American University and would be scheduled for summer, 1978. Teachers observed to be especially competent during this training period would be sent on scholarships to progressive countries to observe comprehensive schools in action for at least one month. Administrative personnel, numbering ten in all, should come to the American University for intensive training in the new system also.

The local phase of training would concentrate more specifically on teaching and evaluation methodologies, and would be planned and monitored by a group of Ministry teacher-training, Research Center, and subject-matter supervision personnel.

Immediately upon employment, the new chief administrator of the experimental school would assume the major responsibility for the utilization of human and material resources, but he would be continuously advised by a new secondary education administration unit or council, established to guide the project throughout its implementation, evaluation, and generalization stages.

Students for the new school would be selected from among the population of students just entering the secondary cycle. Total enrollment would not exceed 200, at the beginning of the project. A public relations campaign would be a vital part of the advance planning for the opening of the new school. It was felt that this campaign should include media coverage, distribution of explanatory brochures and statements, and formation of a parents' association.

Budgeting for the project and discretionary use of funds would be a responsibility collectively held by Ministry finance, Research Center, and new school administrative personnel.

Stages of Implementation

Constant communication among all units and persons involved in the integrated school change-over was viewed by the primary planning committee as the most necessary ingredient for success. The sharing of experiences was seen as a deliberate vehicle for increasing the understanding and commitment of each participant.

Three stages of implementation were identified: (1) preparation of staff and of the experimental facility, (2) launching of the pilot project in the prototype school, and (3) generalization to other schools according to a pre-determined time schedule which would allow for problem-solving but would waste no time once the decision to generalize was reached.

Although all of the report of the primary study committee, summarized above, is phrased in the future tense pending final approval, it was in fact recognized that the project was already well underway, even to the point of beginning the selection of experimental school personnel.

When approval came, in March, 1977, secondary committees for curriculum were formed. By the end of the year, the required planning and curriculum specifications were nearly complete and texts were being written.

Early in 1978, the school building was finished, and interior details and equippage were scheduled for completion prior to the beginning of school in September.

Selection of personnel, finalized in April of 1977, made it possible to begin the first phase of training under contract with the American University of Cairo and the other sites of school visitation. Training outside of Kuwait was scheduled for February, 1978, with the local training phase to be conducted during July of the same year.

Dates of acceptance of new students, beginning with September, 1978, were scheduled twice annually, at the beginning of September and February semesters, with the school's full complement of students (all four grades) to be reached by September, 1981. Evaluation of the entire project would proceed throughout all of its phases.

The final recommendation of the 1976 report was that an implementation committee should be formed, to include chief administrators from these Ministry units : Planning and Training, Secondary Education, Technical and Vocational Education, Examination and Student Affairs, Curriculum and School Texts, Employment (Personnel), Financial Affairs, and Legal Affairs. This group would have the authority to translate plans into action.

Future Directions in Curriculum Planning in Kuwait

The initial position papers on the new credit system, issued by the Center of Research for Curriculum in October, 1976, were utilized in preparation of the final report of the primary committee (the report which has been reviewed in detail here). However, the position papers were much more explicit about the long-range nature of the change plan, meant to include intermediate education and to have influence even on the primary education cycle. The "Report on the New Credit System" (October, 1976) projected a number of action steps which would unite the curricula of the separate stages in both horizontal and vertical directions. For example, the length of school day would become progressively extended, from 20 periods per week (four per day) for elementary students to 25 periods per week for intermediate students and 30 for secondary school students. Thus the time in school would build toward a total of six periods per day, 50 minutes each period, with ten minute breaks in between. Schools would recess for one and a half hours at mid-day to allow for student activities, recreation, and light refreshments.

In the earlier grades before the introduction of social studies, extra periods could be devoted to Arabic language and religion for boys, and women's education and arts for girls. At the secondary level, the first two grades would be general, leaving specialization for the last two years of high school. This would avoid the rigid tracking in one of the four secondary branches which presently occurs and would provide more flexibility of scheduling and career development for the student.

The expected development of depth in a given subject area would occur over successive years, and the interrelationships among subjects within one grade level would be accomplished through the offering of complementary course work, e.g., the scheduling of math courses which would help students to understand a given science course simultaneously with, or as pre-requisite to, that course.

Besides the advantages of acquiring of knowledge in a more coherent and patterned way, students will also have the advantage of completing separate units of study. If failure occurs for the student in one unit, he will not be forced to repeat an entire year of school as is presently the case. Transfer from one line or branch of specialization to another will be facilitated, and school guidance will help each child to individualize his potential, according to the principles laid down in Kuwait's new educational policies.

The introduction of the credit system in Kuwait is clearly part of a nation-wide, planned curriculum innovation of larger proportions. Though the Kuwaiti model parallels the comprehensive school systems of Sweden and the United States, it has distinctive features. Two of these are the emphasis throughout on religious education and the new subject called "library and research," which combine to create a four-year 40 credit requirement as opposed, for example, to the 36 credit commitment of U.S. secondary school students. Also, the use of English as the language of university instruction and as the language of commerce in Kuwait forces the State to emphasize second language course work to a greater extent than is the case in the U.S.

The next few years should be an interesting period in the educational development of Kuwait, as the new experimental school begins to have impact on a sample of the nation's youth and the nation's educators and parents as well. The opening of this school surely marks the nation's acceptance of new ideas and technologies more in keeping with its importance in the world economy, and more in step with the Kuwaiti people's sense of their own destiny.

Chapter 6

THE CASE OF QATAR

Though the State of Qatar is among the smallest of the Arab nations of the world, with an area of 4,000 square miles (1,000 square Kilometers) and a current population of approximately 200,000, it is exceptionally firmly committed to the principle of Arab unity and to the philosophy of sharing resources and personnel for the benefit of all. Qatar is consistent in its demands for inter-Arab cooperation in the development of educational systems and school curriculum.

Relying heavily on faculty and curriculum from other Arab nations at the beginning of its own educational development -- as Saudi Arabia, Kuwait and others have also done — Qatar is now beginning to replace non-Qatari educators with its own newly-qualified school staffs and administrators and to make curriculum changes on the basis of its own needs. Two Faculties of Education, male and female, were established in 1973, and these schools have formed the nucleus of the new (1977) University of Qatar, located to the north of the capitol city of Doha. Additions to the University since its inception or planned in the very near future include Faculties of Science, Humanities and Social Science, Engineering, Administration and Economics, and Communication. By 1984, first graduates of each of these divisions will already have entered or will then be ready to enter the academic and professional communities in Qatar and the Mideast, creating a new pool of human resources which may be drawn upon for national and international development. The new University also has an obvious role to play in the change of old and the development of new curriculum and teaching techniques.

The era of modern, free education in Qatar barely spans twenty years, though the nation has been a center of culture and trade for many generations as a result of its peninsular character and strategic access to the Arabian Gulf. Education was a private matter, often occurring in the home on a tutorial basis, prior to 1956. In that year, a government ministry was created to begin the development of a national school system. At present, every inhabited area has at least two schools, one each for boys and girls.

The magnitude and pace of educational development in Qatar is succinctly expressed in the following excerpt from a recent Ministry of Information publication:

> In the twenty-year period, from 1956 to 1976, the number of Qatari students and pupils was increased twenty-fold, as was the number of teachers in the country. Previous differences in educational opportunities offered to boys and girls were almost completely eradicated: by 1976 the number of female pupils represented 46.4 percent of the total. The pupil - teacher ratio is now one teacher for every 16.4 pupils. (Qatar, n.d,n.p.)

The network of schools which is now in place includes all academic levels from pre-school to university. Advanced degrees are earned in other Arab nations or abroad. Large numbers of Qatari students have been encouraged to continue their education beyond the university baccalaureate degree, and specializations which seem particularly relevant to Qatar as a developing nation are favored.

In addition to the organization and operation of a national school system, the Qatari government has in its jurisdiction a technical and vocational training center which teaches 15 different specializations and which graduates annually close to a thousand skilled workers. Students come to the center not only from within the tiny nation itself but also from ten other Arab countries.

Since the population of Qatar is 80% concentrated in or near Doha, the national library and the national museum are accessible to most

Qataris, and these facilities are beginning to serve specifically as environmental learning resources for school children, in accord with the new science curriculum and the new emphasis on experiential learning.

The basic objective of education in Qatar, an objective similar to that of other Arab nations, is to create a well-educated, responsible citizenry which practices its belief in Islamic values and traditions and which also recognizes the role which scientific and technological knowledge plays in political, social and economic advancement. The aim is to construct a modern Qatari society, with adequately trained manpower and with an educated leadership in many fields of endeavor, in order that balanced and regulated growth can occur. As in other Arab societies made suddenly and enormously wealthy through oil export, Qatar is faced with the necessity of broadening its educational base almost overnight, and with diversifying its industry and occupations over the next decades as a sound economic and social measure. The nation values its national identity, its international participation, and its spiritual and cultural ties with the rest of the Arab world.

Financing the Schools

Table 18 reports percentages of gross national product (GNP) which Qatar spent on education in the years 1965, 1970, 1972, and 1973, as well as yearly totals in thousands of riyals. In the nine-year period, total expenditures are shown to have nearly tripled. Broken down by type of expenditure, school operating costs more than doubled and capital expenditures in 1973 were close to three times what they were in 1965.

More recent data indicates that in 1976-77, a total of 271,806 thousands of riyals* were spent on general education, with a mean per-student cost of $8,392. These costs should be understood to include boarding accomodations (as needed), scholar incentives, transportation, health services, school textbooks, and other learning services and materials. Capital expenditures were reported at an all-time high (60,000,000 riyal). The amount of budget used for salaries, general services and maintenance alone increased by more than 66 million riyal over the previous year, making a total of 211,806,230 riyal which was expended on school operating costs in 1976-77.

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*The Qatari riyal converts to $3.90, U.S. currency.

From Table 18, it appears that percentages of gross national product utilized for educational purposes are unusually low. The most obvious explanation is that economic growth has radically outpaced educational needs, for other evidence of Qatar's interest in and commitment to educational progress is abundant. Critical years since 1973 are, of course, not included in the table, so that more recent trends in expenditures relative to GNP are unavailable. An entirely new picture may be developing as Qatar enters a new era of educational planning.

Table 18 : Total Public and Current Expenditure and Capital Expenditure (in thousands); Percentage of GNP; and Percent of All Public Expenditure: Qatar

year	total expenditure (in riyal)	current expenditure (amount)	current expenditure (as % of total)	capital expenditure	total as % of GNP	total as % of all public expenditure
1965*	35,096	31,886	90.9	3,210	---	---
1970*	44,829	41,029	91.5	3,800	4.6	---
1972*	65,902	57,056	86.6	8,846	4.0	7.1
1973*	94,768	80,078	84.5	14,690	4.6	7.0

* Expenditure of the Ministry of Education only, not including higher education

Source: UNESCO Statistical Yearbook, UNESCO, Paris, 1976, p. 384.

Data on educational spending by levels is clouded, not only because the latest year reported in the UNESCO Statistical Yearbook is 1972, but also because very large percentages of total public expenditure on education in Qatar are not allocated by level. In 1975-76, for example, 740 million riyals were allocated by the Qatari government for development of the university over the succeeding six year period, and though this is obviously third level education, it does not represent all third level expenditures but is instead a separate, single-purpose funding. Nor is the allocation expressed in terms of annual spending.

Table 19 does, however, yield data which shows the shift from emphasis on primary education toward second level or secondary education (both general and vocational). During the years from 1965 to 1972, expenditures on first level education gradually decreased, while the amount spent on secondary schooling rose dramatically from 17.1 percent to 31.9 percent of total public funding. Developmentally, the shift can be explained as a response to the fact that, as larger numbers of students enrolled in and completed elementary education, a heavier demand for post-elementary education was generated, creating a need for additional secondary facilities and teachers.

Enrollment

In 1967, there were only 28 teachers and 640 students in pre-primary education, numbers which had grown to 73 and 1,039 respectively by 1973. Between 1967 and 1973, the number of pupils and the number of teachers both doubled at the first level of education. Secondary school enrollees increased over 500% and the number of teachers employed at this level rose from 143 to 625, with from 100 to 200 teachers added annually.

As noted in relation to shifts in expenditures, the huge increases in secondary level populations are the direct result of maturation of the

Table 19: Estimated Public Expenditure on Education in Qatar (in thousands) and Percentages by Level.

year	total in riyal	first level[1]	second level[2]	third level	other types of education[3]	expenditures not allocated by level
1965*	31,886	47.9	17.1	---	4.2	30.8
1970*	41,029	40.7	23.2	7.2	4.2	24.7
1971*	45,913	40.2	29.1	7.7	3.3	19.7
1972*	57,056	36.2	31.9	2.9	3.0	26.0

*For all years, these are expenditures of the Ministry of Education.

1. includes pre-school and primary.
2. includes general, teacher training.
3. includes special education, adult education and similar institutions.

Source: UNESCO Statistical Yearbook, UNESCO, Paris, 1976, p. 411.

the first groups of primary school students, as well as an outcome of the government's encouragement to students to continue formal education beyond their elementary years. The figures cited appear in Table 20.

More recent figures indicate that in 1976-77 there were 22,626 students enrolled in primary or first level education; 5,850 in preparatory schools; 3,280 in general secondary schools; 256 in teacher training institutes, 87 in the school of commerce for boys, and 68 in trade school for boys. Religious schools for boys, including both preparatory and secondary levels, had an enrollment of 220. Totals at all pre-university levels of education were 17,051 for boys and 15,336 for girls, making a grand total of 32,387 students enrolled in primary, preparatory and high school education in the academic year 1976-77. The final figure represents a gain of nearly five thousand students since 1973. In 1977-78, enrollments rose again, reaching a high of 34,320 pupils, for a gain of approximately 2,000 students in a single year.

Table 20 : Number of Pupils and Teaching Staff on the Three Levels of Education in Qatar.

year and level		no. of pupils	no. of teaching staff	pupil/teacher ratio
Pre-primary education	1967	640	28	1:23
	1970	686	47	1:14
	1972	1,034	54	1:19
	1973	1,039	73	1:14
First level	1965	11,188	574	1:19
	1970	15,025	772	1:19
	1972	19,182	949	1:20
	1973	20,237	1,024	1:20
Second level	1965	1,448	143	1:10
	1970	4,095	324	1:12
	1972	6,369	524	1:12
	1973	7,368	625	1:12
Third level	(no data)			

Source: UNESCO Statistical Yearbook, UNESCO, Paris, pp. 129,146, 196.

Organization of the Levels of Schooling and Specified Goals of Each Level

The educational cycles in Qatar are divided into six years for primary education, three years for preparatory and three years for high school. Secondary schooling is basically a two-track system, composed of separate schools for general education and vocational education. These schools are further subdivided by sex. Vocationally, men have more options. They may attend teacher training institutes, trade schools, schools of commerce, or religious schools. Girls have the single vocational option of teacher training institutes, if they are not enrolled in general education. General education is itself subdivided into two branches: Science and Humanities (literature). Figure 6 shows these levels. Recently, programs have been started in the Faculties of Education to extend the professional preparation of teachers beyond the institute or secondary school level. One program is designed for teachers of grades one through four and the second is for teachers of grades five and six. Both offer evening classes, and the goal for the teacher in continuing education is to complete 72-80 credit hours of basic education courses. A like number of additional credit hours can earn the in-service teacher primary school certification in a subject specialization.

These programs are for practicing teachers. The regular college program leading to a baccalaureate degree consists of the standard four year combination of education and subject matter course work, with religious studies remaining as an additional requirement.

Goals specified for each pre-university cycle or level of education, as reported and studied by the Committee for Educational Evaluation of the Department of Curriculum in the Ministry of Education and Youth Welfare, are both general for all cycles and specific by levels.

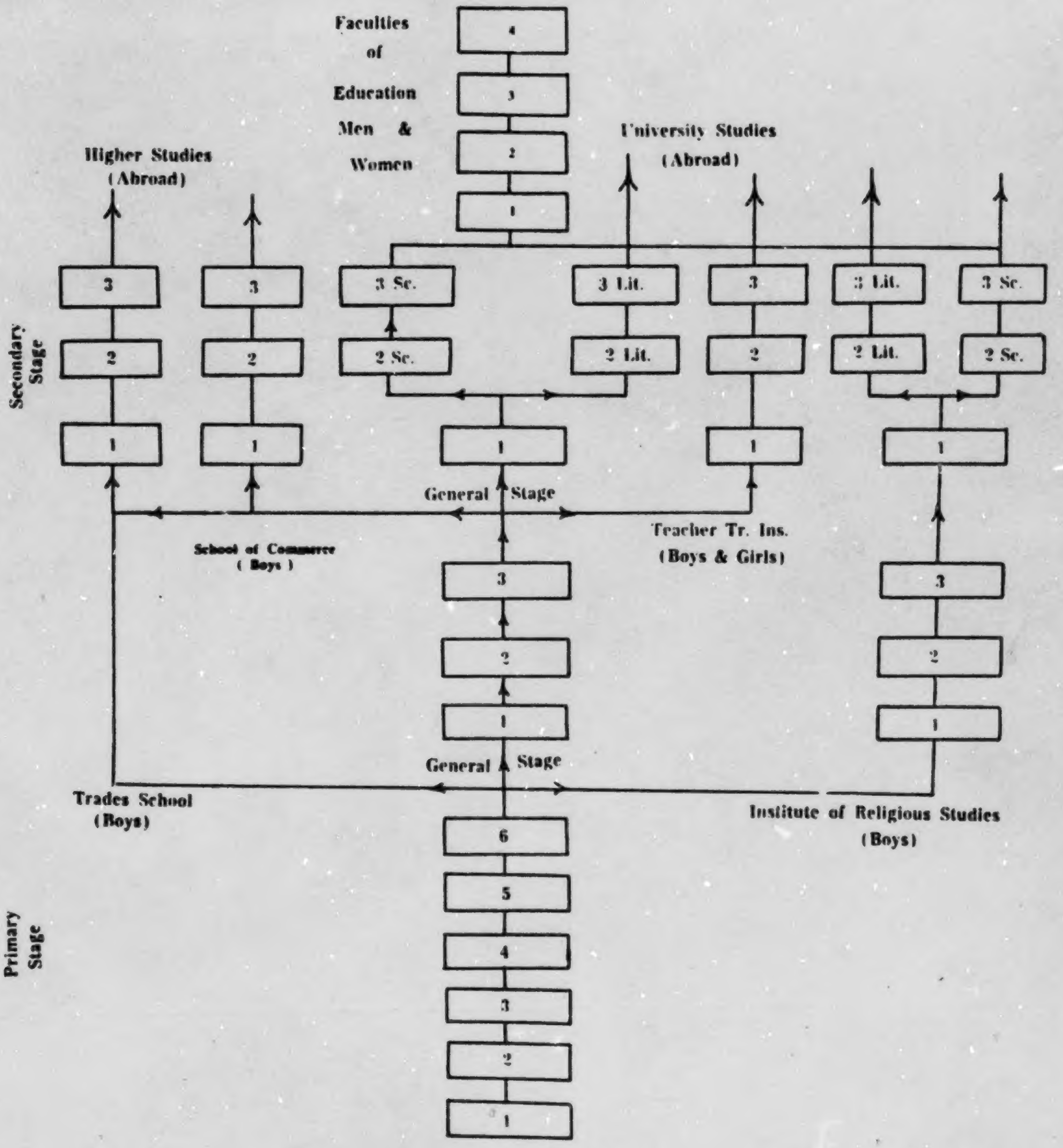
All educational levels share the general objective of building a new generation that believes in God, takes pride in Islam, is loyal to national and Arab world interests and is concerned to act in ways that reflect Islamic moral values. The aim is to foster development of body, mind and emotions and to encourage the spirit of work and the willingness to strive for worthy personal, national, and humanitarian goals.

Specific goals for each level of education are as follows:

Primary Education

1. Strengthening belief in God and commitment to Islam through knowledge of the Qur'An and Sunnah, through training in religious ceremonies, and through daily practice of Islamic moral values;

Figure 6: General Structure of Education in Qatar


Faculties of Education Men & Women
4
3
2
1
Higher Studies (Abroad)
University Studies (Abroad)
Secondary Stage
3
2
1
3 Sc.
2 Sc.
3 Lit.
2 Lit.
3 Lit.
2 Lit.
3 Sc.
2 Sc.
General Stage
School of Commerce (Boys)
Teacher Tr. Ins. (Boys & Girls)
General Stage
Trades School (Boys)
Institute of Religious Studies (Boys)
Primary Stage
6
5
4
3
2
1

Source: Development of Education in Qatar (1975/76 & 1976/77), Ministry of Education, Doha Qatar, August 1977.

2. Development of the basic tools of knowledge, including reading, writing and math concepts and their applications in life situations; also development of the love for learning and the ability to acquire knowledge from many different sources and materials;
3. Encouragement of general health care, including an understanding of cleanliness, basic nutrition, recreational needs, etc;
4. Development of awareness of local environments, including social institutions and units (e.g., families, neighborhoods, organizations of various kinds) and the cooperative role the student plays in each;
5. Encouraging the positive affective development of the young child and building aesthetic awareness and motivation;
6. Developing an understanding of the country in relation to the Arab world as a whole, including the recognition of common heritage, religion, language, and future goals.
7. Fostering an appreciation of national history and culture and of broader political, social and economic issues which show the relationships of Qatar with the rest of the Middle East and the international community.

Preparatory Education

In addition to adherence to the same goals specified at the elementary level, special objectives for junior high school education are described also. Since some students will not continue beyond this level, the preparatory cycle should serve to round out basic skill learning and prepare school leavers for social and economic participation. Citizenship skills and religious, cultural, and aesthetic awareness are to be developed in greater depth, and the special emphasis will be on life applications. Other stated objectives are:

1. The encouragement of feminine pursuits in girls' education (e.g., home management and crafts, child-rearing);
2. Greater emphasis on scientific and technological skills, orientation toward the work world and specific occupational guidance;
3. Encouragement of academic preparation for later cycles of study;
4. Expansion of the educational options through the encouragement of independent learning activities;
5. Holistic presentation of learning materials to all students, in an effort to avoid premature tracking of learners into specific career paths;

6. Maintenance of flexible, active programs;
7. Careful attention paid to the parents and their aspirations for their children, as well as to the communication to parents of the sensitivity of this developmental stage for young students.

High School Education

Educational objectives at this level have two basic dimensions: preparation for university studies and selection of a specific field of study, or if the student is enrolled in a vocational education school, selection of a trade field. Educational achievement as indicated by entrance examinations still determines the type of high school preparation which is open to students, with those who are best qualified (by current academic measurements) going on to general high schools and, potentially, to the university. However, there is growing interest in the possibility of development of comprehensive schools, with an elective structure and a course credit system.

Other objectives specified are:

1. Detection of special aptitudes during the first years of secondary education, and the encouragement of specialization in the second year;
2. Development of vocational information and greater awareness among teachers of the variety of professions they can encourage their students to enter;
3. Encouragement of scientific attitudes and interests in students through curricular enrichment and research projects;
4. Development of general knowledge in fields not necessarily a part of the students' career program, in order that a more holistic and liberal education may be acquired;
5. Development of thinking skills;
6. Provision for extra-curricular activities and expanded art, library and science laboratory facilities; and
7. Encouragement of the social development and positive behaviors of the student.

Although the current educational policy of Qatar is based on these general objectives, the Committee for Educational Evaluation recognized in its study that these statements are more than ten years old and that there is no permanent mechanism for continuing evaluation and revision of them. The Committee found that the statements were also highly idealistic and theoretical, not actualized in fact, and that as a result there was significant lack of congruence between the stated goals and Qatar's contemporary needs. For example, the objective concerned with vocational guidance for students prior to secondary school entrance is not congruent with the limited range of curricular opportunities actually available to them.

The committee felt that these objectives were distanced both from curriculum practice and from school practice. They were also found to lack cohesiveness over all three cycles of schooling, partly as a result of having been developed separately for each level.

Organization of Curriculum Development Agencies and Activities

The Ministry of Education and Youth Welfare has broad educational responsibilities, including the development of sports, scouting, and other constructive programs for Qatari youth. Subsumed under its more specifically educational branches, which are headed by the Director-General of Education and his Assistant, are four divisions: Technical Affairs, Financial and Administrative Affairs, Religious Affairs, and Cultural Affairs. The sub-units of particular interest in a study of curriculum development practices are the Department of Technical Research and the Department of Curriculum, Textbooks and Audio-Visual Aids. Both are located within the Technical Affairs division. A third office, the Office of Educational Planning, is headed by a planning specialist who helps to develop objectives and to coordinate the implementation of short-term and long range goals in educational and curricular change. This office was established in 1975. A year earlier, Qatari respondents to a UNESCO questionnaire (reported in Mechanisms for Planning and

Administration of Curriculum Development in the Arab World) had identified need for greatly improved and expanded capability in the fields of research, planning, curriculum development, and preparation of curricular materials. It had been their experience that, although the use of imported Arab language textbooks and materials was necessary in the initial phase of educational development, their continued use was impractical. Often, these materials contained irrelevant sections, made no mention of Qatari geography, climate and government, and were otherwise not entirely suitable for the local situation.

Though considerable progress has been made in reorganization of units and upgrading of personnel to meet specific curriculum development demands since the survey cited, there is general awareness that much remains to be done. In common practice all branches of the Ministry as a whole are of necessity involved at some level, at one time or another, in the changing of curriculum and school practices.

One recent effect is that, as the meaning of the term "curriculum" has undergone modernization and transformation, the necessity for conducting educational research vis-a-vis curriculum has become more and more apparent. Curriculum developers in Qatar as in every other nation are challenged to be more precise about the nature of change itself and about the consequences of curricular adjustments in actual school settings. To date, most changes have been implemented nationally, without experimental control group testing. Changes introduced have been felt to be of sufficient merit and have been so badly needed as to rule out the customary, time-consuming experimentation phase. All of the schools of Qatar are thus considered sites of field trials. The customary basis for evaluation of curriculum effectiveness, therefore, has been the comparison of achievement scores earned prior to and after the installation of new curriculum.

The Technical Research Department is subdivided into five branches or sections which have separate but interactive responsibilities. These are sections for (1) the preparation of statistical documents, (2) research on school buildings design and function, (3) the planning and implementation of teacher training, (4) preparation of reports, proposals and other research documents, and (5) technical secretarial services.

This unit and its sub-units which have primary responsibility for data generating and interpreting functions, viewed as critical for curriculum decision-making, are shown in Figure 7. Relationships with other Ministry units are expressed as generally cooperative rather than hierarchical. Final authority for curriculum decisions does, of course, reside with the Minister and his deputy directors in their roles as agents of the Emir.

The process of holistic or partial curriculum change makes use of three broad subject-area committees. These are general committees which have been formed for the purpose of studying curriculum reform in mathematics, science, and social studies education. The Assistant Director-General of Education plays a leadership role in each of these committees, as indicated in the diagram.

The Technical Research Department typically prepares research data and proposals for use by the Curriculum Department and its associated committees, which take all the pertinent information under advisement in their curriculum development activities. The study committees may be composed of consultants or specialists from other nations or international organizations, as appropriate, as well as from the Ministry itself and

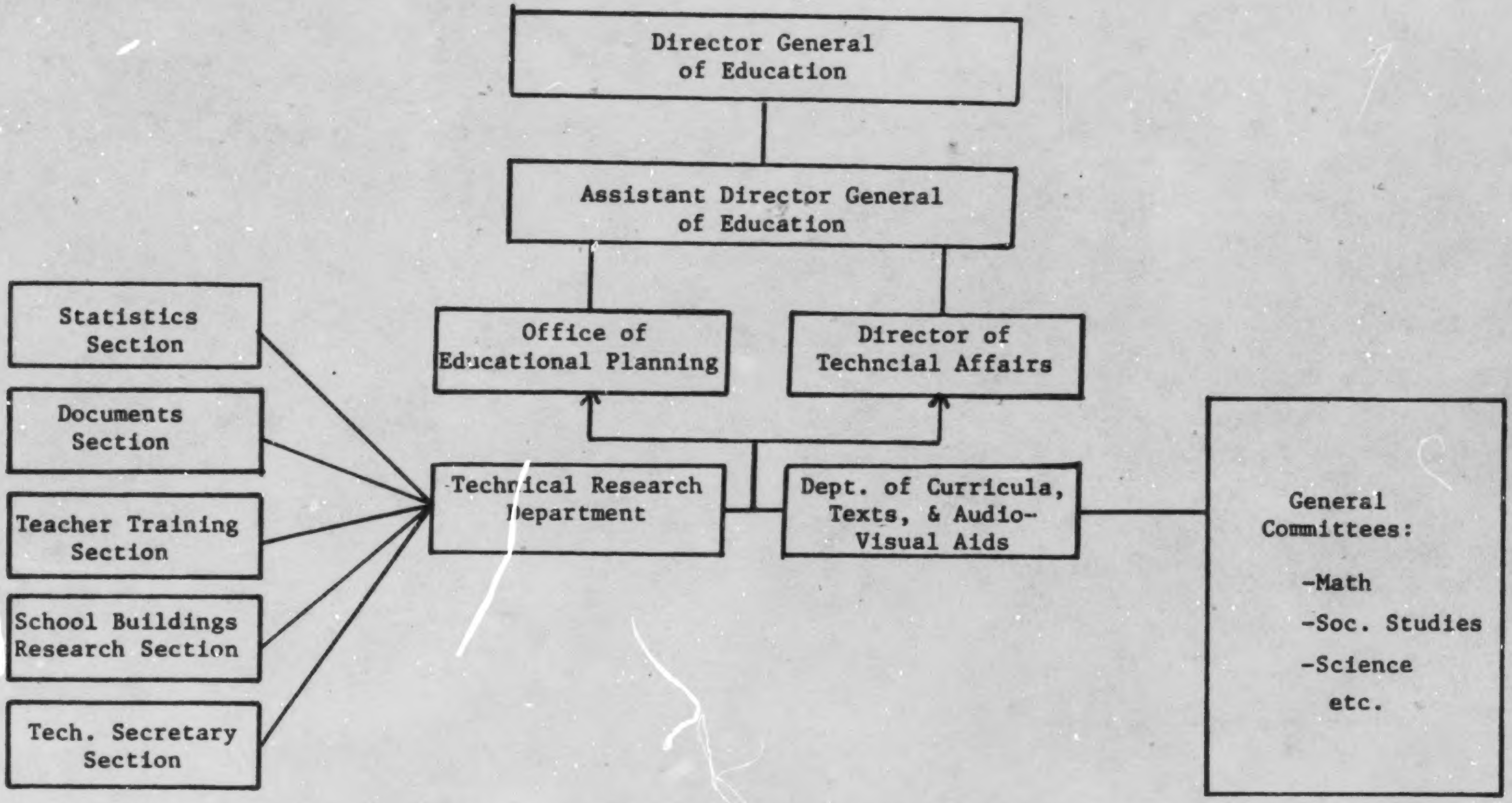

Director General of Education
Assistant Director General of Education
Office of Educational Planning
Director of Techncial Affairs
Statistics Section
Documents Section
Teacher Training Section
School Buildings Research Section
Tech. Secretary Section
Technical Research Department
Dept. of Curricula, Texts, & Audio-Visual Aids
General Committees:
-Math
-Soc. Studies
-Science
etc.

Figure 7: Organization of Ministry Units for Curriculum Development in Qatar

Source: Interviews, and Development of Education in Qatar. Ministry of Education, August 1977, foldout.

from the Faculties of Education. Selected subject-matter teachers and inspectors may serve on curriculum committees, but as a group, their input is primarily in terms of written reports and returned questionnaires from the field. Inspectors routinely report observations from their school visitations, which are taken into account in the next round of planning.

There are several Ministry projects relating to curriculum development which are now in progress or which are under study. Among these is a project aimed at developing an integrated curriculum, with modern books and methodologies, for the teaching of English language. A second effort is concerned with literacy and adult education. There is a third project which involves a partial revision of the curriculum for Arabic language and science.

Other current research interests include developing data concerning the progress of Qatari nationals who are studying abroad, and making some useful generalizations from the accumulated data on school visitations. Qatari researchers are also engaged in intensive investigation of the merits and applicability of the comprehensive school concept, the post-elementary school credit system, and the flexible programs of modern polytechnical schools. Another proposed investigation has the character of a "self-study" of the Ministry and of the Faculties of Education, to be conducted by a joint committee.

Committee work is substantially the method employed in Qatar to identify need for change and to begin to operationalize whatever changes are agreed upon. The process is "top down," with top-ranking educators at the center of all decision-making and with other parts of the educational system serving primarily as information sources.

Specifically, the curriculum change process starts with the formation of a committee consisting of Ministry personnel and staff from the Faculties of Education, to assess and formulate research problems and to develop survey instruments for data collection. Teachers, students and school administrators are the target groups to which questionnaires may be addressed.

Once the data has been gathered and reported, the committee analyzes the results and makes a decision whether partial or holistic changes are needed. Whichever choice is made, the group then turns the project over to a technical committee which is asked to write the plan for the curriculum. This more specialized work group, like the study committee, may include outside consultants if it is perceived that they can make valuable contributions to the design or to the preparations for implementation. In any case, the second committee typically includes appropriate Ministry and university personnel as well as some Qatari teacher representatives.

Current practice demands that, when the curriculum documents are finished, they are submitted to selected teachers for their evaluation and suggestions. Further, new policy suggests that, once general approval of the proposed changes has been secured, implementation will proceed in only two or three schools which will serve as testing grounds for the new methods and materials. Prior to classroom implementation, teachers are trained in the philosophy and use of the changed curriculum.

After teachers have had several months of experience with the innovation, all pertinent materials, evaluation data and recommendations for further revision are turned over to textbook writing committees. These are composed of subject matter experts, teachers, and other specialized personnel, and their work is to make changes and incorporate new data as requested, readying texts and other materials for each grade level involved, in time for general use in the succeeding academic year. Minor alterations are thus accomplished annually. Major re-evaluation of each text occurs every three years, with the possibility that it will be completely rewritten if found unsatisfactory.

What is significant about the recent re-thinking of the curriculum development process in Qatar is that a new emphasis is being placed on greater involvement of school teachers and administrators, so that several levels of educational personnel ultimately will have influence over the design of end products despite centralized decision-making. The recommendations of the educational planning unit in the Ministry have supported this movement toward grass-roots participation, as a curriculum development strategy of proven scientific and human value.

Questionnaires soliciting such grass-roots input and distributed in the schools are returned to the office of the Director General of Education, and are channeled from there to other Ministry committees, units, or persons as appropriate. Examples of such survey instruments are a recent questionnaire inviting participant evaluation of a training session for science teachers, and a questionnaire asking teachers to evaluate the problems encountered in implementation of the new science curriculum in the first three primary grades.

The first survey assessed strengths and weaknesses of separate elements of the training program, sampled sentiments of the teachers concerning the need for follow-up training through demonstration lessons and identified not only the most requested topics for these lessons but also the teachers the trainees would most prefer to have teach them.

The second questionnaire cited was an attempt to discover to what extent supportive curriculum materials and equipment were available to first, second and third grade teachers who were implementing the new science curriculum. Teachers were also asked to describe any special situations which made application of the curriculum difficult in their individual school settings.

Development of Science Curriculum for Primary Schools*

In October, 1974, the Department of Curriculum in the Ministry was authorized to host a meeting of educators concerning the need to develop a modern science curriculum in Qatar's schools. Guests present included the Director of Technical Affairs, the Dean of the College of Education, chief science inspectors, general school inspectors, and two UNESCO consultants -- one of whom was a specialist in science education. General objectives identified by the Ministry were (1) to consider a complete revision of science curriculum, grades 1 through 12, (2) to revise texts and methods of elementary science education first, to be readied for use by the academic year 1976-77, and (3) to re-consider the role of the teacher and the necessity for additional teacher training.

A primary outcome was that Qatar agreed to employ a science education expert to take a leading role in the curriculum development project. The conferees agreed also that a holistic approach would be taken, integrating developmental aspects such as teacher training and textbook and media preparation. It was perceived that, in the process of defining the new curriculum and identifying major concepts to be taught, a cadre of developers would become thoroughly knowledgeable about the innovations and could then train others as the need arose. The Ministry agreed to fund the project and to provide personnel for a two-year planning period. The Director for Technical Affairs was asked to prepare a time-table of expected completion dates for each stage of development. At the request of the Dean of the College of Education, the possibility of adding male and female in-service science teachers and school directors to the development group was considered.

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*For this discussion of the science curriculum project, the authors are indebted to M. N. H. Abdel-Galil, whose English language history of the project has served as a major source document for this present study. Mr. Abdel-Galil was the expert employed by the Ministry of Education and Youth Welfare to lead the science education developmental effort. It is clear that Mr. Abdel-Galil's courageous initiatives and scientific rigor have helped to set the tone for future curriculum development endeavors in Qatar.

A compelling motive for changing the science curriculum was the recognition that science education was not a preferred area of study for most elementary school students, and that even secondary school science subjects tended to be avoided by a great majority. Since student interests lay in directions completely opposite to the goals of scientific and technological development of Qatar, something obviously would have to be done to reverse the trend. The science expert's first study sought to analyze not only the trend itself, but also the reasons behind it. The following causes were cited: (1) badly designed curriculum, (2) topics unrelated to Qatari children and their environment, (3) subjects poorly taught, (4) other inadequacies of teaching staff in the classroom environment, and (5) lack of adequate science education facilities in the schools. Subsequent research (which included structured interviews with primary school teachers and directors as well as with a sample of Qatari parents representing a variety of professions) uncovered further details of shortcomings in the curriculum and texts. This critical study found that objectives for science teaching were not well defined, that quality and general appearance of children's texts and teachers' manuals were unappealing, and that topics were not developed in an integrated way from grade to grade nor even within a single grade. The importance of environment hardly entered into the considerations of science teachers or students.

Statistical analysis of the responses to the structured interviews showed the respondents were in agreement that a coherent philosophy of science education was missing, and that goals and objectives were not to be found in standard curriculum materials. Texts were repetitive from grade to grade and each topical unit was self-contained and apparently unrelated to other units. Subjects as important to Qatari youth as the desalinization or importation of their drinking water were wholly ignored in the science curriculum.

The projected time frame for science curriculum renewal for grades one through twelve was nine years, i.e., three for each stage of schooling. the plan was to spend the first year developing curriculum for grades one through three, which would be applied in schools during the second year of the project. Also during the second year, curriculum for the remaining grades in primary education would be prepared for application in the third project year. During third year implementation, planning would proceed for science education at the preparatory level, and so on until all pre-university science education would have been completely revised.

In a study document prepared for a magazine called Education, the expert in science curriculum cited the great increase in scientific knowledge, the organic interaction between science and technology, the integration and overlapping of different fields of scientific interest and the automation and mechanization of production systems as incentives acting to induce curriculum change. Also associated with these incentives are the resulting changes in material assets and competition for energy sources and raw materials, and increasing reliance on synthetics and the industries that produce them. A further impetus to development of scientific education was seen in the interconnectedness of all nations of the world via improved communication and transportation systems.

The dimensions of new science education, according to this analysis, must be complex and dynamic, with an emphasis on both theoretical and applied aspects. It must be introduced early in the child's life, if the scientific imagination and habits of disciplined thinking are to be fostered. Scientific judgment must replace random methods of arriving at decisions and adoption of arbitrary value positions, and it must be used to enhance the conceptual and intellectual development of the learner himself.

A subsequent study sought to analyze Qatar's social, economic, manpower and technological goals over the next decade. To these two studies were added the understanding of stages of cognitive development, derived from Piaget. Following these data gathering activities, goals and objectives for the elementary science program were developed, with the necessity for integrated studies kept carefully in view of the developer. Several other considerations were the care which must be taken to create new texts which would be aesthetically appealing and would also accurately represent the planned curriculum, the emphasis on student skills and interests, and the educational principle of active learning in a supervised laboratory situation. In general, the new philosophy of science education was to provide the student with opportunity not only to discover new knowledge, but also to discover and analyze relationships among the data and processes to be learned.

Memoranda from this development period attest to the care which was taken to work with the science curriculum committee, to incorporate research and planning suggestions of the committee and to keep the committee and subject matter teachers informed of the rationale for and progress of the development planning.

Setting Goals and Objectives and Planning Implementation Steps for the New Science Curriculum.

The objectives of primary school science education were developed in accord with the general policy for that level, reviewed earlier in this study. These science objectives have been stated explicitly both in planning documents and in the teachers' manuals which accompany the new curriculum. They, like other documents in the new science curriculum, are the result of cooperative planning under the leadership of the science curriculum specialist employed to undertake this mission. Cooperating groups included subject matter inspectors, Ministry personnel from the Educational Planning, Statistics, and Technical Research offices, and professors from the Faculties of Education who had had experience with the Qatari science education situation. All documents, during the course of their development, have been submitted to examination at every level of the educational system for suggestions and subsequent approval.

As a first step, objectives were specified in three categories: objectives related to students' skill development, objectives related to environmental awareness, and objectives related to spiritual awareness of the created universe. Philosophically, there was an attempt to steer a moderate course between teacher-centered and child-centered approaches. In the first category, these skills were addressed:

1. environmental observation skills;
2. ability to analyze relationships among observational data and to form general conclusions as a result;
3. skill in equipment manipulation and simple investigations; safe use and care of laboratory and environmental materials;
4. skill in use of the scientific method for solving problems designed to be of interest to and within the cognitive development of the specific age levels;

5. exercise of curiosity and development of the exploratory, self-initiated discovery attitude;
6. ability to associate science with productive and interesting leisure time activities or hobbies; and
7. thorough grasp of the concepts presented.

Objectives related to the goal of environmental awareness were phrased in the following terms:

1. Helping the children to explore their environment through planned tasks to be carried out in their free time;
2. Training them to collect information about the components and resources of their environment from references, charts, brochures, and discussions with specialists;
3. Developing their environmental consciousness;
4. Helping them to form basic scientific concepts related to their environment and its best utilization;
5. Developing attitudes towards saving their environment against consumption and pollution, through discussing the effects of these acts on their hygiene and standard of life;
6. Helping them to form basic concepts related to their own health, public health and environmental hygiene.
7. Involving them in projects to awaken public conciousness towards the cleanliness of their homes, schools, and the larger environment; and
8. Helping them to appreciate the value of individual efforts and group efforts in solving environmental problems.

Objectives specified concerning the linkage of science and religion are for the most part self-evident. In general, they are addressed to the development of the child's understanding of the interrelations among all creatures and environmental systems, so that interdependence of these is presented in an evolutionary and ecological way and is interpreted as a planned and marvelous Creation.

The cited objectives were submitted in draft form to a panel of 15 educators, drawn from all levels of the Qatari educational system. Though some expressions were modified and additions were made, these served as the basis for the objectives which appear in the current version of the teachers' manuals.

Final approval of the elementary science curriculum development project has been contingent on completion of several complementary ventures, including the preparation of guidelines for the writing of texts, actual writing of the texts and manuals, preparing media materials, training teachers to use the new curriculum, and introducing the new concepts, materials and procedures experimentally in all primary schools in the State. The choice to generalize the curriculum everywhere at once was made on the basis that, with less than 50 schools to consider and with planned annual revisions of texts, more controlled experiments would be unnecessary. The last steps in the process in Qatar to date have been the evaluation of the completed implementation and the initiation of planning for the preparatory level of science education. Evaluations have been conducted via surveys and school visits, as previously indicated, and these data have provided suggestions for revisions which will be incorporated in the second editions of the curriculum materials.

The conceptual scheme for development of the curriculum sought to take into account the school facilities available, the existing skills and characteristics of teachers, learners and school administrators, class sizes, and the factors in the pupils' home environments which could either facilitate or detriment their achievements. The major assumption which guided the change process was that the local environment must be the legitimate focus of primary school science education. This assumption led to the identification of six component categories of environmental studies: (1) the study of human beings, (2) plants, their growth and usefulness, (3) animals and animal husbandry, (4) matter, (5) energy, and (6) physical phenomena.

Main concepts within each of the categories were identified and established as goals of understanding which each student would be asked to achieve. In addition, criteria for integration of concepts within grade level and over the continuum from grades one through six were kept in mind.

The next step in conceptual development was to detail the content of each unit in each grade (grades one through three in the first development cycle) and to publish the proposed curriculum outline in Arabic and English. Though the contents of the syllabus for each grade, one through six, are too extensive to be reproduced here, some examples may serve to illustrate the final curriculum specification.

The syllabus for grade one includes 22 lessons on "living things around us;" 12 lessons on personal hygiene and environmental cleanliness; and 14 lessons on science and modern life, showing the inter-relationships of climate, light sources, magnetism, transportation and other technology. First graders have two science lessons per week. Second graders are also scheduled for science twice weekly, and they study five units: (1) familiar wild animals, (2) planting and cultivation, (3) the human body and its primary functions, (4) science and modern life from the perspective of understanding simple physical properties of objects, and (5) the movements and components of the earth.

One further example serves to show the progression from the simple concepts of the earlier grades to the greater complexity of the same basic concepts at the sixth grade level. Sixth graders have double the number of lessons per week that are taught in the earlier grades. They study blood circulation and its effects; microscopic life and its effects (positive and negative) on the human organism; earth surface and effects of weather, heat, atmospheric pressure, etc.; energy and its sources; modern means of transportation; the solar system; lens and magnification; and generation of electricity.

Writing Texts and Teachers' Manuals and Preparing Audio-Visual Aids

On the assumption that conceptual understanding develops best when a variety of educational activities are utilized, a radical revision in the approach to text preparation was proposed. Instead of ready-made answers and conclusions, thought-generating questions would be posed. In order to answer these questions, students would find it necessary to complete a sequence of prior learning activities and answer a series of subordinate questions. The appropriate learning activities might consist of planned discussions, exploratory studies, laboratory or environmental investigations, and classification of collected information.

In light of this revised opinion of what texts should include and how they should be utilized, the role of the teacher shifts away from the traditional lecture method and becomes a matter of classroom management. The teacher as manager plans the educational experiences, leads discussions, and supervises practical activities. Because of this new focus on classroom management, it was thought critical to develop effective teachers' manuals, to explain the new philosophy, the conceptual approach, the specific goals and methodologies, and also to discuss ways and means to utilize new materials and conduct student evaluations.

Once the books were written, lists of needed teaching aids and equipment were specified for each grade. From these lists, determinations were made as to which items were readily available, which would have to be ordered, and which should be locally produced. A series of film strips and slides for the six grades were planned and a time schedule set for production. Within a three month period, 30 scripts were readied and sent to the audio-visual aids section of the Curriculum Department for production. New films and projection equipment were ordered to facilitate the media presentations in the schools.

Training of Teachers to Implement the New Science Curriculum.

Two in-service training sessions were arranged during successive years of the project. Teachers for grades one through three received three weeks of training in December, 1975 and fourth, fifth, and sixth grade teachers were trained in December of the following year. Training designs were the responsibility of the science education expert; administrative back-up was provided by the Teacher Training Section of the Technical Research Department.

A team of trainers was assembled, composed of experts in science education, science supervisors, educational technologists and other educators. The seminar rather than the lecture method was the chosen mode of presentation. Teacher trainees shared in discussions and in the planning for audio-visual aids and simple laboratory equipment. Another dimension of the training sessions was the actual performance by the teachers of the experiments and specimen preparations suggested by the curriculum for their respective grades. Teachers were rotated through different parts of the program so that they were always working in small groups. At the end of training, the trainees were asked to give feedback in writing concerning the strengths and weaknesses of the workshops and offering suggestions for improvement of the training design.

Experimentation and Evaluation Studies.

There were cogent reasons advanced for treating the entire elementary school population in Qatar as experimental subjects in the testing of the new science curriculum. Among these were the manageable proportions of data collection based on the small numbers of schools, and the difficulty of finding appropriate comparison groups. Rural schools normally have less than six pupils per grade and represent widely different environmental and cultural circumstances, so that selecting an experimental school from among them did not seem justified. Further, the forces for progress are so insistent that educational leaders are often reluctant to delay new curriculum adoption until after it has established a record of validity and reliability. Also, as previously reported, the provision for annual revision of teaching/learning materials and procedures precluded the danger of "institutionalizing" flawed designs.

Accompanying the development of the new curriculum and supporting media materials has been the devising of new techniques of student evaluation. Objective tests have been designed, reasoning and other ability tests have been administered, and objective tests based on responses to images have been developed for children at lower grade levels whose language skills are not fully developed.

Because of the Ministry's insistence that the first three grades should be introduced to the new curriculum in the same academic year (75-76) and the last three grades in the following year (76-77), a major problem was created for teachers and students in grades higher than grade one. No conceptual or experiential basis was laid for them by participation in the curriculum at the entry level, and they were in fact plunged into the middle of a curriculum designed in an integrated way for progressive concept acquisition. The burden was placed on teachers to try to overcome the serious gaps in prior knowledge and environmental science activity which older primary students must inevitably have in the light of the new curriculum.

An obvious explanation for this apparently inefficient procedure is that, for many educational planners, curriculum is still imagined as a collection of facts to be learned, rather than a longitudinal conceptual development. The effect of such an assumption in the case of Qatar is that students were asked to begin near the top of a conceptual hierarchy, and that the conceptual "building blocks" which led to that pinnacle of understanding were somehow to be acquired along the way.

Despite the severity of this constraint, there have been several positive effects of the science curriculum innovation, as evidenced by continuous evaluation of the project. The first evaluation study was conducted in February and March of 1976, four months after the implementation in grades one through three began. Data was generated by means of questionnaires and interviews. Analysis of results showed that, in general, children were highly attracted to and interested in the new books and learning activities. The arrangement of concepts and investigations by age levels was found to be appropriate and the worth of the teachers' manuals was proved beyond any doubt.

A major problem in implementation identified by this first evaluation study were the shortages of laboratory equipment, projection equipment and of separate rooms designed for both purposes. Another difficulty was the inadequacy of the children's language skills for deriving maximum benefit from the printed materials and for responding to some types of objective tests. As a result of the data collected, revisions of texts for grades one and two were undertaken. Revision of the third grade text was postponed, in part because of an over-supply of printed material at this level.

The second study was carried out one year later and was focused on the same early primary curriculum. A primary aim was to discover the value of revisions in texts and the extent of improvement in equipment and facilities. A second objective was to test teachers' opinions after a longer period of experience with the innovation. This study was quantitative and a questionnaire was the only data gathering instrument. Effects identified were a continuing problem of lack of special purpose rooms and work areas and an undersupply of audio-visual materials and demonstration models. Laboratory equipment was found to be sufficient. A number of new suggestions for text modifications were offered, but in general the curriculum developer was again assured of the success of the innovation.

Obviously, the demand for new rooms or wings of existing buildings to house special purpose equipment and support environmental science activities has in turn implied the need for a major financial effort. The issue is to be resolved, in part, by including such facilities in the building specifications for all schools to be built after 1978. A higher budget was allocated for audio-visual production of science materials as a result of the study.

The third evaluation study was comprehensive, based on the entire elementary science curriculum and including all grade levels. It sought to discover the level of trained teachers' efficiency in achieving curricular goals in comparison with efficiency of untrained teachers. Another type of information sought was the reason or reasons for shortages of trained science teachers in both boys' and girls' schools. A third dimension of the evaluation was to ascertain the degree to which practical, out-of-class, environmental science projects such as school yard agricultural experiments were being undertaken. Again, an assessment of adequacy of laboratory and audio-visual materials vis-a-vis the real demands of the curriculum was intended.

Other pertinent questions the researcher sought to answer were whether working conditions affected the quality of science teaching, how school administrators perceived the teachers trained in the new science curriculum, what effects poor verbal abilities among students might have on science achievement, and whether there were value differences in the guidance provided by general inspectors and that provided by science-specialized inspectors. A three-part questionnaire was submitted to science teachers and school administrators in all primary schools in Qatar.

Less than 50 percent of the questionnaires were returned. The researcher interpreted this inadequate response as evidence that the need for evaluation is not well understood or not well received, or both. The percentage of trained science teachers is about 40, meaning that over half of the elementary teachers have no special training in science education, despite the fact that school inspectors agreed that trained teachers were working much more effectively. By inference, school administrators were found to be relatively unsupportive of change in the science curriculum. Laboratory and other equipment levels were sufficient but were often poorly used by untrained staff.

Students' language abilities were viewed as generally inadequate for modern science education and as a definite deterent to full use of the new materials. The audio-visual production crews were perceived as not able to handle the volume of requests for services, both because of understaffing and lack of experience and because of their location in Doha away from other population centers.

Male teachers were found to be generally overloaded because of crowded scheduling and traditional student evaluation requirements. Inspectors for the first four grades had inadequate science backgrounds for performing the role of science education supervision, the survey found. The report of this third evaluation study was referred to the science education curriculum committee for study and for development of proposals for future action.

Other Curriculum Development Projects in Qatar.

As noted previously, development of a junior high school curriculum is underway. Three separate drafts show the progress in conceptualization and the rearrangement of units to accomodate the science education needs of the intermediate level of students. The basic theme for the first year students is the human being and his immediate environment. The second year curriculum is concerned with the human being and his relation to natural resources, and the third year deals with the human being and the universe. One hundred lessons are detailed for each grade level. Specific directions have been prepared for out-of-school visits and laboratory activities, as in the primary school curriculum.

Another curriculum effort is being mounted in social studies education, following much the same pattern as the earlier science education projects, except that the new social studies curriculum implementation has begun at the fourth primary level. New math education, already implemented in preparatory and secondary stages, is scheduled for introduction at the primary level. A new curriculum in English language education has just undergone its first year of trial implementation, and Arabic language and religious studies curricula have been partially revised. A French language sequence has been added for grades two and three in the general high school humanities branch. Closed circuit educational television was introduced on a trial basis in 1976-77, and a joint committee from the Ministries of Education and Information are studying the possibilities for using existing broadcast facilities for educational programming.

The concentrated effort in literacy education includes an in-service training program for female and male teachers and has included a revision of the curriculum of literacy education for women. New literacy centers are being established. However, there is the feeling that research is needed in this area and that social attitudes must undergo considerable change, if the literacy compaign is to succeed.

Future Directions for Curriculum Development Activity.

An interesting highlight of the curriculum reform movement in Qatar is its deliberate relationship with curriculum reform in other Arab nations. Planning for junior high school science education, for example, has been shared at a recent conference (1976) with other members of the Arab League Educational, Cultural and Scientific Organization and the integrated science approach presented by Qatar was chosen over other proposals offered to participants. It is clear that Qatar is among the nations most concerned to plan new learning materials and methodologies which will help close the gaps in its educational front. At the same time, Qatar's commitment to what is referred to as "the Arab Nation," i.e., the Mideast Arab world, is unflagging.

The problems in evaluation in curriculum development activities, as detailed at length in the report on the new science curriculum, are by no means unique to Qatar or to the developing nations generally. They point to the existence of a continuous difficulty in translating educational ideals into action and in translating formative evaluation information into new practices. There is potentially a considerable amount of psychological threat to individual status needs and to professional perceptions of educators at all levels of educational systems which are involved in the curriculum change process. But from the point of view of curriculum developers who use continuous evaluation techniques judiciously and solely for purposes of refining educational outcomes, no threat is intended. Qatar has at least seen fit to confront and to grapple with the evaluation issue.

One of the most important areas of future concern is the planning of new curriculum and strategies for teacher education. Thus far, most projects have been short-term, to meet immediate needs. The Teacher Training Section of the Technical Research Department was established in 1976-77 to begin the process of long range development. This unit has responsibility not only for assessing training needs but also for monitoring the special and higher education efforts which have resulted in advanced training abroad for large numbers of Qatari graduates. Educational media and technology programs are especially favored, as are field visits to observe the operations of comprehensive schools.

Chapter 7

THE CASE OF SAUDI ARABIA

Introduction

The Kingdom of Saudi Arabia perceives that it has a special leadership role to play in the Arab world, by virtue of its status as the homeland of Mohammed and because of its guardianship of Islam's most holy places. As a result, the general educational goals of the nation are consciously and positively expressed as *Islamic* goals. The primary purpose of education in Saudi Arabia is to develop good citizens, capable of contributing to social progress, believing deeply in God, and accepting faithfully the Islamic concepts of universe and ideal civilization. To seek knowledge is viewed as the duty of every individual in Islam, and to make adequate provisions for the education of its citizens is a serious obligation of the Saudi State.

Although religious education is prescribed for every level of the educational system and the study of Islamic culture is required throughout the years of higher education, Saudi Arabia does not ignore educational developments and scientific advancements in other parts of the world. The nation seeks to engage in prudent interactions with other educators in other nations in order to select and introduce those new ideas and techologies which are most congruent with Saudi goals and hopes for social progress. Arabic is the official language of instruction, but because of the rapid development of scientific and technological literatures in other languages, exceptions to this rule are admissible.

Another general principle expressed in The Educational Policy in the Saudi Arabian Kingdom (1970-74) is that every girl shall have the right to "education which suits her nature and prepares her for her task in life..." (p. 7). As a result of this provision, the government is increasing efforts to educate both younger and older women through regular girls' school programs and adult literacy training.

Education for girls has a completely separate administrative organization -- an independent directorate with its own staff and facilities. Its activities are for the most part parallel with those of the Ministry of Education.

Saudi Arabia has adopted the strategy of planning in advance for five-year periods of educational development. The crux of planning is expansion; in every direction, at every level, and in every type of education. There is an expressed need for more and better qualified teachers, more school buildings, better equipped laboratories, and even for new kinds of education which have not previously been a part of the Saudi curriculum. It is a matter of great concern to educational planners that each child shall have the opportunity to attend schools free of charge, from the elementary level through the end of the intermediate or preparatory cycle, and in fact for as long as he wishes to continue in school.

There are concentrated efforts in Saudi Arabia to improve mathematics, science, and English language instruction, to upgrade the programs of the teacher training institutes, and to provide new schools for programs (such as commercial and agricultural education) which are in high demand. Early experimentation with the practice of providing one school meal per day has met with such success that there is currently a plan to generalize the food program to other schools.

In recent years, the process of curriculum change and development has shifted toward a more comprehensive model. Formerly the responsibility of ad hoc committees, the curriculum development reponsibility is now vested in a new unit within the Ministry -- the Directorate for Research and Curriculum. This new unit, in cooperation with other Ministry personnel, has general oversight of all educational research and development activities with the exception of those related to girls' education. Curriculum development for girls is the responsibility of the Directorate for Girls' Education.

By their own declaration, the first task of Saudi Arabia's educational planners has been to devise ways for coping with spectacular economic and educational growth rates. They have only recently been free to turn to more qualitative dimensions of planning and to the issues raised in other countries by educational research. With the creation of the new Research and Curriculum directorate, however, the Saudi Arabians expect to begin more scientifically conceived analysis and revision of school organizations, school subjects, teaching methods, and actual learning outcomes. The ultimate aim is complete curriculum reform.

Financing the Schools

The UNESCO Statistical Yearbook for 1976 reports the total amount of public expenditure on education in Saudi Arabia in thousands of riyal,* itemizing the years 1965, 1971, 1973 and 1974. These figures are duplicated in Table 21, together with the break-down by operating and capital expenditures. Public educational expenditure is also represented as a percentage of gross national product (GNP) and as a percentage of all public expenditures in the nation. No data is available from the above source as to how these expenditures are allocated by educational levels. It is apparent from the table provided, however, that educational expenditure in relation to gross national product has been gradually increasing.

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*The Saudi Arabian riyal converts to $3.48, U.S. currency.

On the other hand, in relation to total public expenditure, the percentage used for education decreased rather markedly from 1965 to 1974. A later statistic furnished by the Ministry shows the educational portion of the total budget again climbing from 8.2 to 11.7 percent. This is a 1975-76 figure from a chart titled "Statistical Summaries on Education in Saudi Arabia, Part One," not reproduced for this study.

Table 21: Total Public and Current Expenditure and Capital Expenditure (in thousands); Percentage of GNP; and Percent of All Public Expenditure: Saudi Arabia

year	total expenditure (in riyal)	current expenditure		capital expenditure	total as % of GNP	total as % of all public expenditure
		(amount)	(as % of total)			
1965	514,340	389,940	75.8	124,400	6.3	13.0
1971	1,150,089	1,004,478	87.3	145,611	6.7	----
1973	2,232,657	----	----	----	8.0	9.7
1974	3,760,283	----	----	----	---	8.2

Source: UNESCO Statistical Yearbook, UNESCO, Paris, 1976, p. 384.

Enrollment

In 1973, a total enrollment of 743,396 students at all levels of Saudi Arabian education was reported. Table 22 shows a gain of nearly 7,000 students in primary education alone between the years 1965 and 1973, more than tripling the school population at that level. First level enrollment figures more than doubled, up to 570,697 in 1973 as compared with the 1965 figure of 260,586. Enrollments at second and third levels also more than tripled in the same time period.

By 1974-75, a total enrollment of 977,972 students had been reported. These figures indicate that out of a total population of more than 7 million, only 14 percent were enrolled in school. These statistics, taken from the "Statistical Summaries" cited above, may account for some of the new energy Saudi Arabians are expending to make education more universally attractive and available.

Table 22: Number of Pupils and Teaching Staff on the Three Levels of Education in Saudi Arabia

year and level		no. of pupils	no. of teaching staff	pupil/teacher ratio
Pre-primary education	1965	2,165	----	----
	1970	5,694	185	1:31
	1972	7,479	208	1:36
	1973	9,064	259	1:35
First level	1965	260,586	11,585*	1:22
	1970	422,744	17,435	1:24
	1972	514,133	22,374	1:23
	1973	570,697	26,592	1:21
Second level	1965	33,548	2,287	1:15
	1970	89,226	5,064	1:18
	1972	124,669	8,935	1:14
	1973	148,753	10,295	1:14
Third level	1965	3,625	278	1:13
	1970	8,492	697	1:12
	1972	11,337	1,121	1:10
	1973	14,882	1,454	1:10

* Including pre-primary education and girls' education at the second level.

Source: UNESCO Statistical Yearbook, UNESCO, Paris, 1976, pp. 129, 146, 196, and 250.

During the years covered by Table 22, teaching staff seems to have increased at an even faster rate than student population growth. For example, there were over five times as many third level teachers in 1973 as there were nine years previously. The pupil/teacher ratios as they appear in the table reflect the attention which has been paid to adequate school staffing. From the later source, the "Statistical Summaries" of 1974-75, it appears that pre-primary education has the highest ratio of students per teacher, at 36. Most intermediate and secondary schools have recently enrolled no more than 20 students per teacher. In teacher training institutes, technical education, higher education, and special education, ratios are even lower.

Central Organization for Curriculum Change and Development Activities

In 1975, the Directorate for Research and Curriculum was established within the Ministry of Education. It has exercised jurisdiction over curriculum development matters in two ways: (1) by contracting with universities for curriculum planning services -- notably, with the American University at Beirut -- and (2) by creating clusters or "nuclei" of subject matters and subject matter specialists, as, for example, a nucleus for the social sciences. These categories or units (with membership from university staffs and subject matter specialists within the Ministry itself, and headed by the Deputy Minister for Technical Affairs) have the goal of studying integration and revision of the subject areas in which they have expertise.

In a more general sense, the Directorate is charged with the development of viable educational programs and plans in response to a wide range of inputs from different sources, from inside and outside of the Ministry. Personnel from the Directorate are asked to participate in relevant committee work with other Ministry units, in the pursuit of educational data which will be helpful in the evaluation of educational problems and in the recommendation of possible solutions. The Directorate is also involved in the study of curriculum research as it is carried on by other nations, and it must make assessments concerning the adaptability of a variety of modern design, research, and evaluation methods to the Saudi Arabian educational planning context. Upon adoption of a particular set of methods, strategies, and materials, the Directorate follows the process of implementation.

It has the responsibility to evaluate and report on the progress of each of the curricular changes undertaken and to make recommendations for further revisions as appropriate.

Whereas the old ad hoc committees were convened temporarily whenever the need arose to conduct syllabus revisions, the new Directorate is a permanent unit. As such, it has not only the customary fact-finding and planning duties but also the follow-up responsibilities, noted above, which the old committees did not have. Under the old system, when the committees finished their studies, they simply turned their data and their proposals over to the Ministry, having no further responsibility to translate their theories into action and no accountability for the success or failure of what they proposed, once the Ministry approved their plan. Under the new system, with curriculum change and development specified as a continuous responsibility of the permanent Directorate, curriculum innovations have a better chance of success. They will be monitored by the same administrative unit from beginning to end, from conception to implementation and generalization. Large scale innovations, taking into account a wide range of variables and designed to accomodate integrated patterns of subjects and subject relationships throughout all levels of the educational system, are made possible for the first time under the new management system for curriculum change and development. Staffing the Directorate with well-trained and research-competent personnel who have specialized in curriculum planning as a discipline and as a system science may spell the difference between stop-gap curriculum change and comprehensive, nation-wide improvement in the total educational system, for the fufillment of Saudi Arabia's educational objectives. But the creation of the unit in itself is a step forward, clearing the way for a more unified approach to curriculum change and a more effective managerial process relating to that change.

The new curriculum development unit is a subsystem of the General Directorate for Research and Curriculum in the Ministry. Other subsystems which are also in part responsible for overall improvement of the quality of instruction are the Directorate for Educational Media and the Directorate for Textbooks and School Libraries. The parent unit and subunits are organizationally linked to each other and to the Deputy Minister for Technical Affairs as depicted in Figure 8 .

The new Research and Curriculum directorate builds and maintains a central library for all school books used at the different school levels, and evaluates new texts as they are proposed or developed in order to assure their congruence with the prescribed curriculum before their use in the classroom. In performing this duty, the unit obviously interfaces with the Directorate for Textbooks. It can be anticipated that the new directorate will interface similarly with the Directorate for Educational Media, as increasingly sophisticated curriculum designs begin to require equally sophisticated media resources and presentations.

The general guidelines for curriculum production to which the Directorate for Research and Curriculum is committed are found in the 1970-74 statement of national educational policy (previously cited on p.228). All new curriculum proposals must meet the following criteria:

1. They must be consistent with Islam and with national values and realities, and they must be attuned to Saudi Arabian needs, goals, and objectives.
2. They must be suited to the developmental levels of the students for which they are planned.
3. They must enable the student to meet required achievement standards and to attain his educational objectives.

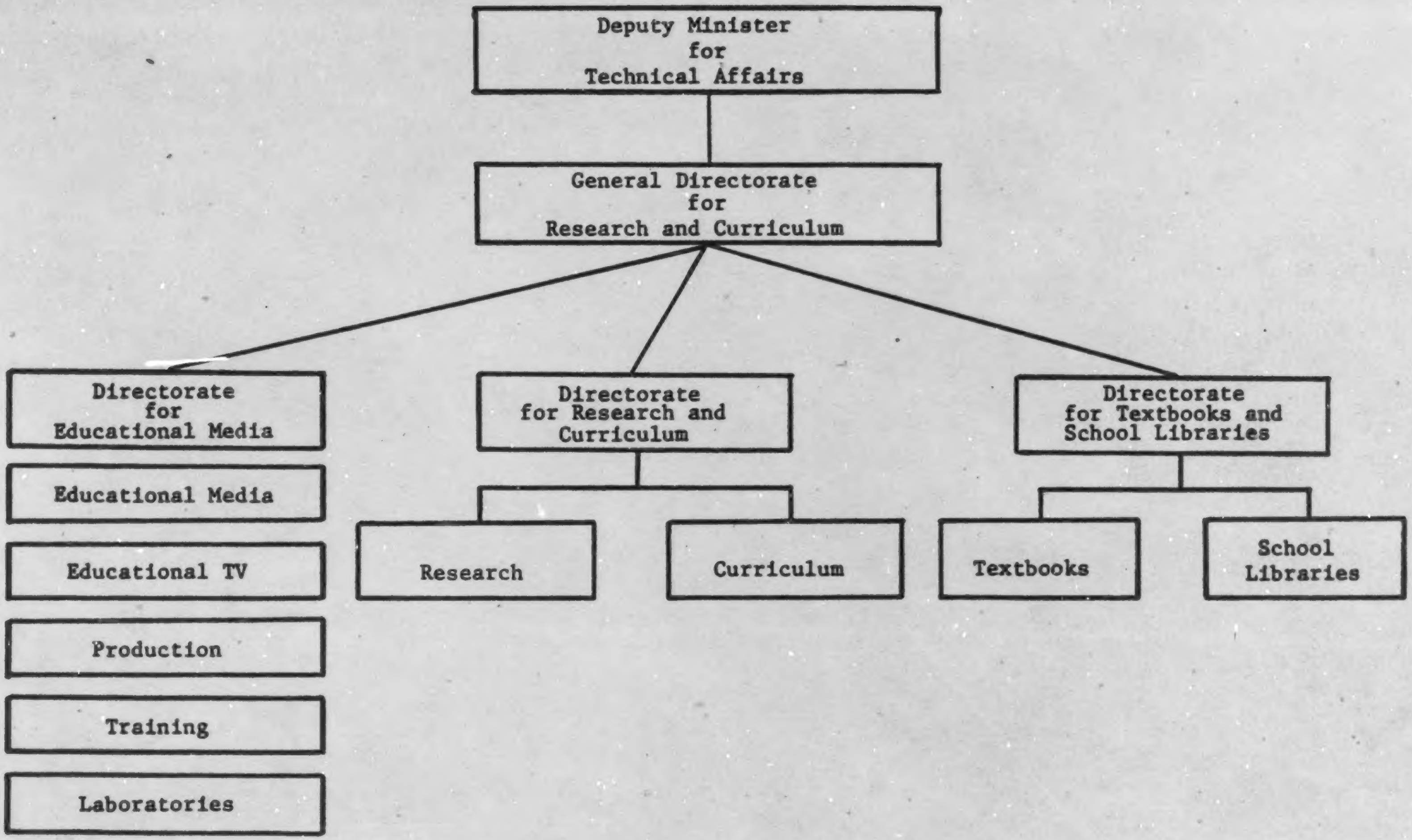
Deputy Minister for Technical Affairs
General Directorate for Research and Curriculum
Directorate for Educational Media
Educational Media
Educational TV
Production
Training
Laboratories
Directorate for Research and Curriculum
Research
Curriculum
Directorate for Textbooks and School Libraries
Textbooks
School Libraries

Figure 8 : Ministry Units Responsible for Curriculum Development in Saudi Arabia
(Source: Interview with Deputy Minister for Technical Affairs)

4. They must also be "balanced, flexible and suitable to various environments and conditions" (p. 38).

In addition to these general criteria, the Ministry has also specified a number of elements which curricular programs are to include. Each program proposal is to state the following:

1. The general objective of the program and its connection with the State's educational policy;
2. The special objectives and course material for each stage of education addressed in the proposal;
3. A definition of the educational levels, scientific skills, and intellectual and moral tendencies that are expected to be achieved as a result of the new program;
4. Instructions to the teachers to guide them in achieving the objectives and implementing the program;
5. A statement or decription of extra-curricular activities which are in line with the proposed curriculum;
6. The purpose of each section of the program; and
7. The proposed method for evaluating the progress of students.

As a further curricular concern, the Ministry demands that texts shall also meet criteria of relevance to the nation and conformity with Islamic principles. The need is cited for appropriate teachers' guide books or manuals to accompany the curriculum and textbook changes. The textbook planning law provides a further set of standards which curriculum developers and textbook evaluators in the Directorate of Research and Curriculum must take into account.

The rigidity of the national examination system implies a further constraint on curriculum development activity. In Saudi Arabia, as in many other developing nations, the methods of student evaluation are highly traditional and are only beginning now to come under serious scrutiny. A special objective of the Ministry in regard to examinations states that: "Concerned authorities shall give interest to other testing methods that measure the capacity, talents, inclinations and capabilities of students in order to direct them toward the education and work that better suit their nature." (The Educational Policy, 1970-74, p. 39) This objective is clearly aimed at such possibilities as aptitude and vocational interest tests in addition to achievement examinations, and it is anticipated that it can also pave the way for the introduction of formative methods of on-going evaluation in the future.

Although modern curriculum development in Saudi Arabia may be said to have begun as early as 1968, with special emphasis paid first to the revision and integration of subject matter in the first four grades of elementary education, all levels of the educational system are now subject to re-evaluation and reorganization. The nation has become increasingly conscious of the need to encourage modern scientific thinking and attitudes and to develop advanced technological expertise. Saudi Arabian educational leaders are particularly aware that, if the nation is to meet its own developmental needs and make important contributions to the world community, the pace of educational change must be increased. Quantitative change must be accompanied by qualitative change, and the role of evaluation in assessing both kinds of change has not always been clearly understood. The follow-up responsibilities of the new curriculum unit may be an indication that evaluation of educational change practices as well as evaluation of curriculum change for its own sake are now perceived as critical components of the curriculum development process.

A major thrust in education at the secondary level is to bring the curriculum into closer relationship with the environment. A corollary of this concern is the new national interest in developing relevant educational resources and opportunities for students in non-urban areas of the country. In turn, this concern implies a need to improve the transportation facilities in remote sections.

Other aspects of school expansion in the rural areas are the provision for mobile health services units, the extension of the school meal program, and the development of interesting new curricular and media materials which do not depend on the availability of electricity for their use and effectiveness. Although the planning documents for the government schools do not seem to have addressed the latter issue specifically, it is assumed that schools in outlying districts will have unique problems and will require special curricular problem-solving techniques. Dissemination of centrally planned and distributed materials is difficult, not only in countries which have isolated populations, but even in nations where transportation and communication networks are readily available. The intensification of the problems of distribution in localities where potential learners are widely separated is obvious. The Directorate for Research and Curriculum is also confronted with all the special difficulties which are inherent in curriculum follow-up, where the schools are far from the centers and regional authorities do not have the expertise to carry on the work of evaluation and continuous revision as necessary to adjust to local conditions.

Though the directorate has two primary modes of operation, i.e., contracting for curriculum development services and convening the nuclear units or "families" of subject matter experts, it receives requests for curriculum change from several sources. Reports of parental dissatisfaction as well as issues raised by teachers and supervisors (inspectors) are channeled to the Directorate for preliminary study. Comments of faculty and administration in higher education concerning the quality and academic standards of entering students are also reviewed. Agency personnel sort these issues according to their complexity, so that simple changes may be made immediately. More comprehensive or detailed curriculum revisions are submitted to the contracting or nuclear planning units.

If the contract route is selected, a committee of Saudi Arabian specialists meets over a one-week period with technical personnel of the university or agency which has been asked to provide the curriculum development service. This meeting establishes broad outlines for the proposed curriculum and specifies the constraints within which the contract group must work. When the contract agency has completed a draft of the proposed new curriculum, it meets again with the Directorate group for a second week of discussions and revisions. Other workshops and seminars may take place, as needed, and involve subject matter specialists from other Arab countries as well as from Saudi Arabia. Questionnaires may be sent to teacher-practitioners in the field to solicit their opinions on various aspects of the proposed changes and to improve the data base on which decisions will be made.

The plan is subject to revision throughout these preliminary steps. When it is finally sufficiently complete and satisfactory to all concerned as a working document, it is sent to the General Directorate for Research and Curriculum for approval. Once this approval has been granted, the contract is formally written and the contract group proceeds with detailed objectives and means for reaching these objectives which it designs and includes in the finished curriculum document. The resulting plan in its entirety is submitted to the Higher Committee for Educational Policy for final approval before it can be implemented and textbooks can be written accordingly.

The American University at Beirut has completed a plan of this nature for introducing new mathematics and science education in Saudi elementary and junior high schools. The particulars of this new curriculum document are discussed more fully, later in this study.

If the nuclear route is chosen, one or more of the national subject clusters or units may be involved. The unit for modern mathematics education served as precedent for the creation of the more recent collective or association for social science education. The Deputy Minister for Technical Affairs is a member of each collective, together with other appropriate Ministry personnel and 10 to 15 university faculty. Though this mode of curriculum development seems similar to the old ad hoc committee system in some respects, it has the advantage of continuous structure and contact with personnel of the Directorate for Research and Curriculum, and the purpose of planning a continuum of educational experiences in each disciplinary field is a hallmark of its efforts.

The first step in this mode of curriculum development is similar to that of the contract mode: identifying curricular problems via reports, complaints, and recommendations of interested educators and parents. Once the Directorate has assessed the situation, it forwards its problem analysis to the appropriate national subject nucleus or, if no unit has yet been created for that particular subject, to the universities for further discussion. The outcome of these discussions is a curriculum proposal, which will in turn generate discussions and questionnaires concerning textbook preparation to accompany the proposed changes.

In the case of the development of modern mathematics curriculum, the planned changes were first introduced with a small sample population, then revisions were made, and finally the changes were generalized in the national school at Riyadh. Plans are to generalize these curriculum changes to other schools during the academic year 1978-79, after a careful study of results in the national school has been completed.

Some of the considerations other than content which must be investigated in these curriculum planning processes are the ages and performance levels of students, the timetable for development and implementation of the proposed changes, and how well the new curriculum will articulate with other subjects and the way they are taught. In the case of the subject nucleus style of development, these are matters which are managed by consensus up to the time the curriculum document is readied for more public discussion. At this point an invitation to participate in a seminar and a printed agenda is sent to selected subject matter professionals and curriculum development specialists in other Arab nations.

After this group has met in seminar, the new inputs and suggestions are discussed by the nuclear unit, additions and revisions are made by these core experts, and the seminar participants are recalled for a second round of discussions. When the document has finally met with the approval of the seminar participants, it is forwarded to the Higher Committee for Educational Policy. If accepted, the plan is returned to the nuclear unit for implementation, textbook and media preparation. There are, however, two forms of approval which determine the extent of implementation. Full approval means an immediate application of the new curriculum plan throughout the Kingdom, at the appropriate level or levels of schooling. Tentative approval indicates that a field trial is required, to test the efficacy of the designed changes prior to more general use.

To insure that teachers, school administrators, and supervisors will be prepared to understand the philosophy and content of the new curriculum, refresher courses are offered at the teacher training institutes. Simultaneously, the revised content materials are made available to regular teacher training programs, in the subject areas involved in the changes.

There are several significant objectives of the nuclear unit approach to curriculum development which may be inferred from the previous discussion but which will bear further emphasis. One is the selective and concentrated attention which each unit can give to the subject at hand. This is particularly important when major overhaul of content and methods is indicated. Second, the nuclear approach seeks to profit from the combined intellectual powers of subject specialists from other Arab nations. A third objective is to provide Saudi Arabian educators at all levels with the experience of working in teams and learning from each other new concepts and methodologies which can improve their own educational effectiveness. The nuclear process is a way to help practitioners view their individual efforts as part of a larger whole and to see relationships in what they do to what is done at other educational levels.

From the Deputy Minister for Technical Affairs on down in the curriculum development hierarchy, there is an understanding that education as process has for too long been subordinated to education as fact-learning and remembering. There is growing concern that attention to the nature of the growing child has somehow been omitted from the consideration of traditional school systems. There are some indications, for example, that the use of classical Arabic is itself a hindrance to rapid learning and comprehension of new subjects, particularly at younger age levels when cognitive skills are not fully developed.

Thus far, the Ministry reports, the curriculum change effort in Saudi Arabia cannot be described as holistic. But it is continuous. There are currently three or four comprehensive schools which are under experimentation in the Kingdom. The curriculum of elementary education is scheduled for a major change effort in 1979, and preparation for this change is underway in different institutes and in the contexts of the nuclear units. Added to these internal preparations is the contracted new curriculum prepared by the American University in mathematics and science. Curriculum revision at junior and senior high school levels has begun with a focus on science education. However, a national nuclear unit is now engaged in preparation of a high school mathematics curriculum relevant to and coordinated with changes in math teaching made in earlier educational cycles.

The Project for Curriculum Development in Science and Mathematics for Elementary and Junior High School Students

The general objective of the project initiated by Saudi Arabia and contracted to the American University at Beirut in 1977 is to increase the mathematical thinking skills of students and to develop their abilities to use the language of numbers in the context of science. More specifically, the developers have sought to organize and sequence curriculum so that students will leave junior high school well prepared to deal with the concepts and methods of science and math as they enter the second level of secondary education.

Among the essential mathematics skills are counting, use of fractions and decimals, and the application of these principles to everyday life. Basic also as a preparation for algebra and geometry is an understanding of the environment in the context of shapes and volumes. From broad objectives such as these, the planners have proceeded to write student learning objectives at several levels and in measurable behavioral terms. These objectives have not been sequenced necessarily as they will finally be taught from year to year, but a model sequence has nevertheless been provided to show how conceptual and skill development may be expected to progress. There were three criteria for sequencing: (1) that the subject matter must be logically organized, (2) that the concepts and skills must be practically ordered so that fundamental ideas and component skills build toward more complex ideas and compound manipulations, and (3) that the materials and skill practices must be cognitively and psychologically matched to student maturation at different educational levels.

Because these three criteria are known to be in conflict with one another from time to time, the progression from year to year in the total curriculum has been presented as a spiral process. Some important elements are introduced in very simple form at first, but they reappear at successive levels in increasingly detailed and sophisticated form. The repetition in variation is to reinforce earlier learning and to develop depth of insight and understanding concerning the major concepts and elements of the curriculum, over time.

This sort of spiral development is thought to provide the student with greater facility in the use of terminology and scientific techniques. The goal of this greater facility is to help him explore his environment and to assist him in the integration of learning at different grade levels throughout his elementary and junior high school studies. From the very beginning, the student is to be encouraged to learn mathematics concepts by relating them to his known environment, with pictures, observations and other objective bases for seeing and recognizing these relationships. The student will also be asked to abstract attributes of objects and to use these abstractions for classifying the orders of nature. At the earliest levels, rules and principles may be inferred but are not stressed. Maintaining the spirit of research is considered to be far more important to the development of scientific awareness and interest. Algorithms as a method of summarizing data are considered useful to the student. When he no longer needs the algorithms, he has progressed in his understanding to a point at which he can be expected to apply math skills quickly and easily. There is an intention further to develop the student's aesthetic appreciation of his surroundings, to help him to enjoy working with his hands, and to encourage him in good health habits.

The learning process in all of the prepared units is built around student activities as much as possible. The student is to be actively engaged. Formally, there are always two dimensions to be considered in each list of objectives: (1) the content of the curriculum and (2) the specification of terminal behaviors which are expected of students after completion of each unit. The terminal objectives are so stated as to become in themselves a basis for evaluation of the student's progress.

Major topics included in the curriculum have been subdivided as follows: The Human Body and Its Functions, The Human Being Interacting With His Environment and His Use of Resources, Similarities and Differences in Life Systems, Interaction Between Life Systems and Their Environments and Change in Both as a Result, Interaction Between Matter and Energy, and Earth as a Part of the Galaxy and Universe. The approach is obviously general, but it contains the seeds of all the advanced scientific disciplines.

A few units of the completed curriculum have been randomly selected and summarized, in order to demonstrate the method of development and sequencing and to provide examples of the graduated levels of objectives. In the first grade, the science classes are to be scheduled twice weekly, and by the first grade of junior high school, science classes will be meeting four times a week.

Suggested Curriculum for Elementary Science - First Grade

The first grade curriculum is devoted to six objectives and content is divided into six units, with examples of terminal objectives given for a sample-unit as follows:

Unit I - Educational Objective - The Senses

The child will be assisted to understand the senses: that seeing is accomplished through use of the eye and that the sense of touch depends on the skin and hands. Upon completion of the unit, the child will be able to:

1. recognize the colors and their names,
2. discriminate between different shapes when given examples,
3. explain differences in size in appropriate terms,
4. relate to characteristics of color, shape and size in drawings,
5. classify simple objects by observed characteristics such as color, shape, size and length,
6. feel differences in textures and temperatures through touch,
7. determine size (approximate) by touch,
8. classify objects by touch (as soft, round, rough, etc.)
9. practice health care of sense organs (ears, tongue, nose).

Unit II - Educational Objective - Growing

The child will be assisted to understand his own growth in the context of the growth of other children, animals, and plants. He will be led to view growth in a religious sense and to develop good food habits, cleanliness and awareness of health care.

Unit III - Educational Objective - Movement

The child will be introduced to concepts of direction, different kinds of movement such as climbing and walking, and to concepts of speed and rates of movement, and will be instructed in preventive health care.

Unit IV - Educational Objective - Animal Movements

The child will be given examples of animal adaptations for movement, e.g., wings and legs and what they do, and will study the use of animal movements in the service of man (for carrying burdens, etc)

Unit V - Educational Objective - Characteristics of Liquids and Solids

This unit will explore characteristics of such liquids as water, including such aspects as cleanliness, pollution, smell, sound, vibration, freezing, vaporizing, etc. and also the characteristics of such objects as stones, sand, dust and their relationships with each other and with water.

Unit VI - Plant Leaves

The objective in this unit is to acquaint students with different types of leaves and the changes that occur in them.

Suggested Curriculum for Junior High School - First Grade

There are four units in this curriculum. One studies attributes of matter and characteristics such as volume, structure, and weight. Units of measure are included. The second objective is to study cells and make comparisons between live and dead cells, plant and animal cells, etc. The cell studies are related to a larger context of physical change and growth, involving biology, chemistry, and astronomy.

The third unit is concerned with the structures and functions of living organisms, and with classification according to similarities of structure and function. Examples of this classification are vertebrates and flowering plants. Live specimens will be classified. Different types of movement and power will be addressed in the fourth unit, along with measurements of different kinds of power (e.g., electricity).

Suggested Curriculum for Junior High School - Second Grade

There are four units also in the second year curriculum of the junior high school. They are subdivided as follows:

Unit I - The Human Body and Its Care

1. digestive organs, functions, and health care
2. blood circulation, " " "
3. the respiratory system, functions and health care
4. the central nervous system, " " "
5. elements of change in the context of maturation

Unit II - Chemistry of Materials

1. molecular number, names and symbols of common elements
2. laws of chemical reaction (e.g., acids and bases)
3. water, liquids, salts, etc.

Unit III - Movement and the Balance of Power

1. balance of power
2. distribution of elements
3. sound and its characteristics; relation between energy and waves
4. light, heat and their waves
5. electrical energy; a.c. and d.c.(current)
6. magnetism
7. transformations of energy

Unit IV - Earth, Its Characteristics and Elements that Affect it

1. relation between the earth and its galaxy
2. surface changes and elements triggering change
3. contents of surface strata
4. volcanoes, earthquakes, core of the earth

Suggested Curriculum for Junior High School - Third Grade

As in the earlier grades at this level, the curriculum is divided into several major units. The first of these is a unit on genetics in human and in living organisms in general. Genetics is explained as a growing science and as having important implications for animal and plant husbandry. Other implications of genetics which are discussed are the interrelationships of inheritance and environmental factors in human development and the role of genetic information in overcoming inherited illnesses. The study begins with cell structures and functions, proceeds through cell division and fetal development, and explains the dominance and recessiveness of genetic inheritance from parents. Hybridization is of course included in the section on plant and animal husbandry.

Other units are concerned with energy and its changes, chemical reactions, change and continuity in the environment, and technology and human beings. The last unit named is presented in greater detail below.

Unit V - Technology and Human Beings

The concept of technology and its evolution

1. existence of different levels in different societies
2. changes in technology and in society as a result
3. discovery and use of basic elements in nature and their relationship to the development of highly trained workers
4. development of institutes for training; devlopment of research centers; relationships of these organizations to social needs
5. discovering the importance of availability of continuous energy in large amounts for modern technology
6. need for mechanization

Aspects of services of technology

1. control of natural disasters
2. tools for changing environments, directly and indirectly (e.g., household electricity)
3. importance of air conditioning in the desert; comparison of the desert environment with other environments
4. modern communications systems and their effectiveness in uniting of different parts of the world; discussion of some of the primary means of communication and their characteristics

5. discussion of some of the basic technological achievements which lead to more healthy environments (e.g., plumbing, water purification and desalinization
6. implications of technology for medicine (e.g. drugs and immunization)
7. introduction to chemical industry and chemical products; in particular, the oil industry
8. implications of technology for mass production, and price reduction on mass produced items
9. the use of calculators as aids in mathematical computation
10. the importance of computers for information storage and retrieval.

It is apparent from the brief descriptions of course content and the lists of general objectives that there is considerable overlap in content from one level to another, but it is equally obvious that the depth of treatment and the comprehensiveness of the issues discussed at the third level of junior high school are a great distance beyond the way in which they are first introduced in the elementary grades. New subject areas are also added, of course. The critical element in the curriculum development, however, is the sense of continuity from one year to the next. For the purpose of assessing the actual learning that takes place, the behavioral objectives are equally important. These have not been stated in the summaries except in the first example on sensory awareness and appreciation. In order to avoid lengthy lists, the later examples have simply been restricted to an outline or summary form.

What is important about this set of examples is the gradation in levels of analysis of content and the behaviors by which students will demonstrate their acquisition of knowledge and skills. Such detailed analysis enables experienced curriculum developers to specify test items, and to suggest which items should be a part of formative evaluation and which are of sufficient importance and generality to be included on final examinations. In other words, the demonstrated mode of curriculum development has important implications for the reconsideration of testing concepts and practices in mathematics and science, and by analogy, to every other field of study in the Saudi Arabian school curriculum.

Organization of the Saudi Arabian Educational System

Elementary school education in the Kingdom consists of six years, followed by three years of junior high or intermediate education. High school incorporates three grades, making a total of twelve years of study for the secondary baccalaureate degree. Girls who successfully complete the intermediate level have the option of attending general high school, a teacher training institute, or a technical institute. Boys have the further options of commercial or agricultural institutes.

Once they have finished the secondary level of education, boys may be admitted to the Higher (Royal) Technical Institute in Riyadh for four years of intensive education in the basic and applied sciences. If they are less technically oriented, they may enter one of four universities at Riyadh, Jiddah-Mecca, Dhahran, and Damman-Hofuf. To enter the university, however, the student must have pursued general rather than technical education. The university is also the route to advanced degrees.

Girls in general secondary education may also qualify for university training. If they have instead been enrolled in teacher training, they may opt for either a two-year college which will extend their teacher preparation, or for a full four-year educational studies program at the girls' Higher Institute. Those who complete the two-year college may transfer to the Institute if they have been successful and desire to do so. This Institute, along with the universities, offers access to advanced degree programs. The successive levels of education are shown in Figure 9, with arrows indicating the appropriate paths which a student may take. As is evident from the diagram, schools for boys and schools

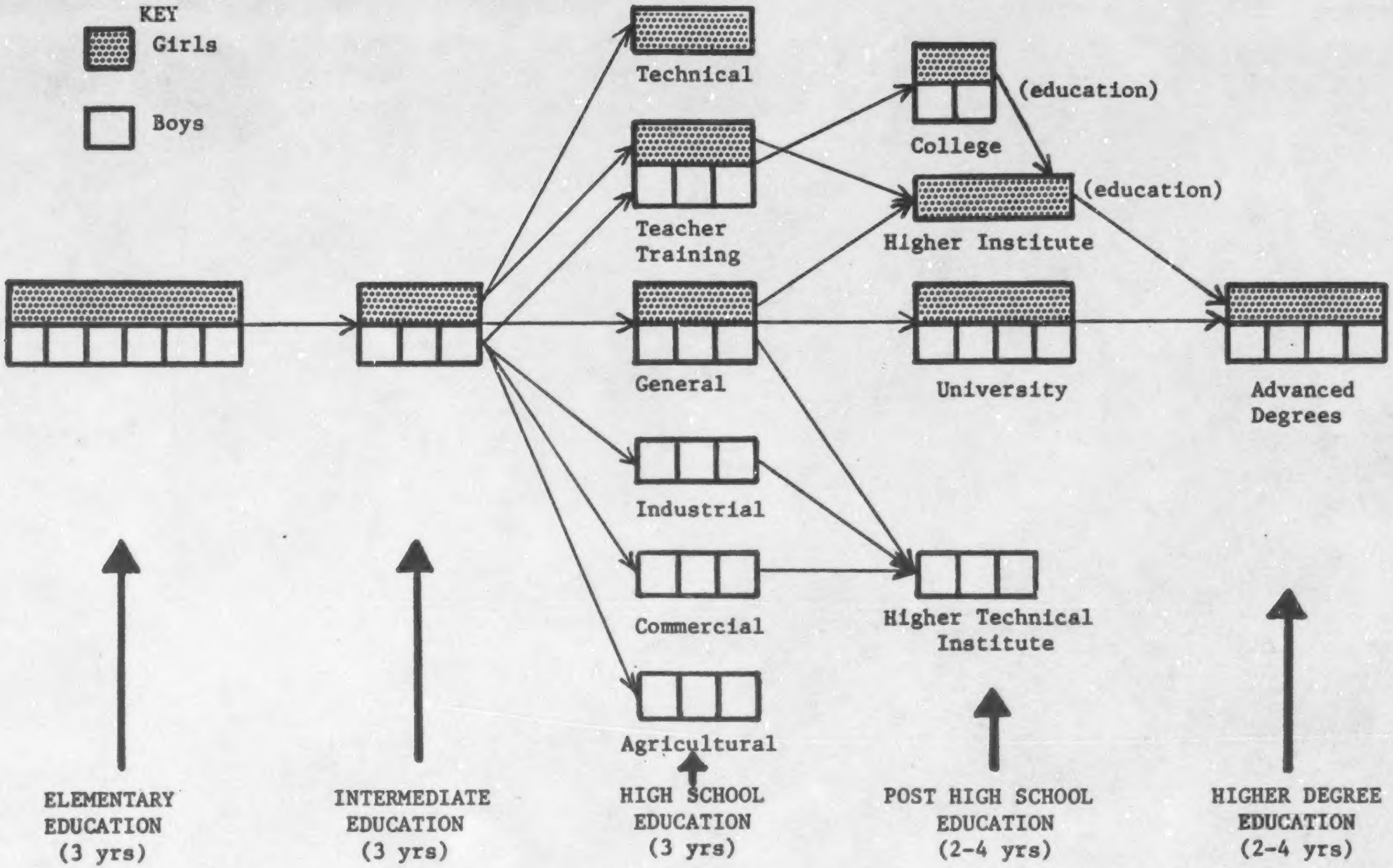
KEY
▩ Girls
☐ Boys
Technical
Teacher Training
General
Industrial
Commercial
Agricultural
College
(education)
Higher Institute
(education)
University
Higher Technical Institute
Advanced Degrees
ELEMENTARY EDUCATION (3 yrs)
INTERMEDIATE EDUCATION (3 yrs)
HIGH SCHOOL EDUCATION (3 yrs)
POST HIGH SCHOOL EDUCATION (2-4 yrs)
HIGHER DEGREE EDUCATION (2-4 yrs)

Figure 9 : Organization of the Saudi Arabian School System
(Source: The Role of Education in National Development, Ministry of Education, Second Five-Year Plan)

for girls are completely separate, at all levels of education. Only government schools are represented in this chart.

The Directorate for Girls' Education (Girls' Education Administration)

In Saudi Arabian educational planning, there are not one but several school supervising organizations at the national level. In 1975-76, there were 62,220 students enrolled in private educational facilities; 37,545 enrolled in universities; 15,428 in schools supervised by the Ministry of Defense; 609,990 in schools under the jurisdiction of the Ministry of Education; 4,127 in schools operated by other governmental organizations; and 328,684 in schools which are administered by the Directorate for Girls' Education (Statistical Summaries, 1975-76).

Out of the total non-university government school enrollment of 958,229 in 1975-76, a little over one-third were girls. Although there were 80 coeducational kindergartens in private education, there were none operated by the Ministry and only one operated by the Directorate for Girls' Education. Four coeducational schools for special education were then in operation under Ministry control.

From these data alone, it is apparent that the development of coeducation is antithetical to current government policy and planning. This holds true even for pre-school and adult education. As a result, improving the status of Saudi girls' and women's formal education is almost solely the responsibility of the separate government agency called the Administration or Directorate of Girls' Education, with the mandated cooperation of the Ministry. The Directorate is housed separately from the Ministry and has its own staff and Higher Committee for Educational Policy. However, the chief administrator, who is male, has the same cabinent status as other ministers.

Curriculum change has occurred in much the same fashion in girls' education as it has in schools under Ministry jurisdiction. The curriculum for girls' institutes has in fact been identical to the curriculum for boys except that the study of mathematics has been discouraged and girls are instead enrolled in intensive studies which are oriented toward the arts and the female role in Saudi Arabian society.

The most recent curriculum change is reported to be the result of holistic study of the entire curriculum of the girls' institutes. The addition of behavioral studies which are related to Islamic values and Saudi educational policy was undertaken as a result of the reconsideration of the curriculum as a whole, and is now in its third year of application. New texts have been written and are being used on an experimental basis. Much of the motivation to make these revisions came from reports of teachers and inspectors, and the new curriculum was introduced to and discussed with them prior to its implementation. In planning these studies in Islamic educational psychology, religious education teachers were used as consultants.

As the last Five-Year Plan ended (1974-75), the number of classes for girls had doubled. Having expected to open 300 village schools, the Directorate was instead able to open and staff 500. The number of teachers was nearly doubled. Some of the increase in teachers was the result of accelerated preparation of Saudi Arabian teachers for general secondary education. Though it had been anticipated that this level would need to be staffed entirely by non-Saudi faculty during this five-year period, in fact 54 indigenous teachers were qualified and hired, to supplement the 480 secondary education teachers from other nations.

The number of girls attending teacher training institutes rose to 3,600, a figure higher by 1,000 than was anticipated. By 1975-76, the figure had increased to 4,064. At the end of the current five-year period, the total enrollment of girls in teacher training institutes is expected to reach close to 13,000. Projections for increasing enrollments, staffing, and buildings anticipated for teacher training and general education are shown in the bar graph (Figure 10) on page 256. Dotted bars represent the 1974-75 levels, and undotted bars represent the expansions which are expected to be achieved by the academic year 1979-80. It is apparent that, proportionally, the greatest increase is expected in teacher education, with enrollment by 1980 anticipated as nearly tripled from 1975 levels.

In order to appreciate the tremendous strides which Saudi Arabia is making in the field of girls' and women's education, it is necessary to realize how brief a time has elapsed from the opening of the first girls' school, a facility for orphans, in 1956. Prior to this event, girls were tutored separately or in small groups in the home, and although they were taught reading and simple mathematics, their studies were primarily religious in nature.

The first government schools for girls at any level opened in the academic year 1959-60, and the Directorate for Girls' Education opened a teacher's training college in Riyadh ten years later, as graduating high school students created the demand for it. Currently, there are plans for one or two-year extensions beyond secondary education in the fields of accounting, arts and crafts, administration, child psychology, and secretarial studies.

Women were first admitted to the universities in 1969, but in the beginning they were allowed to use the libraries only one day per week at scheduled hours and they depended on closed circuit television for lectures, doing their studying at home. Separate but equal facilities are presently

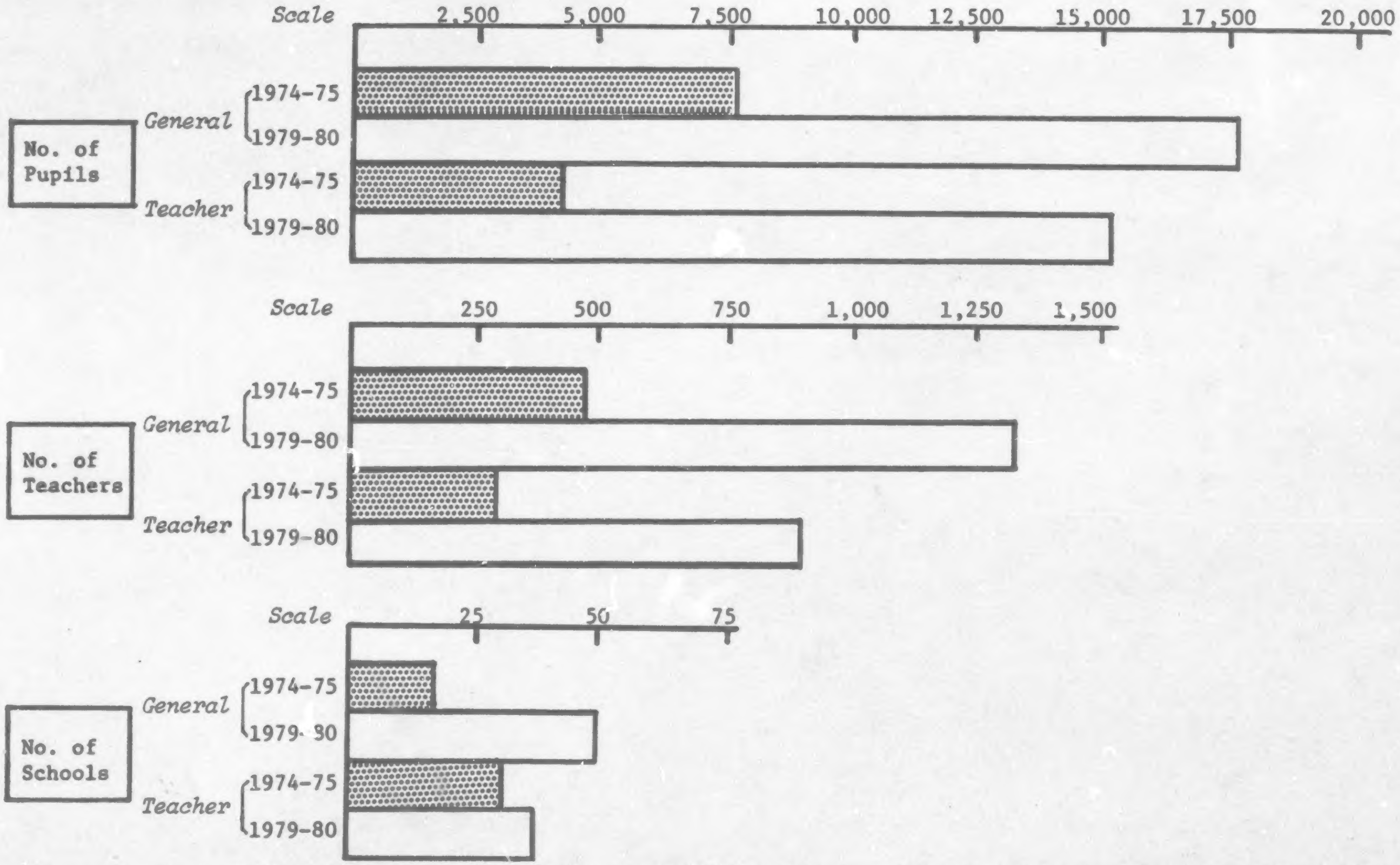

Figure 10: Projections for Increases in Girls' General High School and Teacher Training Institutes (1975-1980)
(Source: The Role of Education in National Development, Second Five-Year Plan, Ministry of Education)

being constructed or arranged for at a rapid pace.

As demands for post-high school education have pushed the Directorate into major efforts to provide appropriate avenues upward toward advanced degrees, the burgeoning elementary and junior high or intermediate school populations have also forced expansion in student enrollment, staffing, and school building programs. But elementary gains are proportionally smaller than the leaps in intermediate, secondary, and post-secondary education. Figure illustrates the relationships between 1974-75 census levels (dotted areas) and the levels which are projected for 1979-80 in elementary and junior high schools. Gains are roughly parallel with those expected in boys' education.

Other general objectives of educational planning for girls over the current five-year period include (1) expansion of facilities, (2) increasing enrollments, (3) making education more accessible through further development of village schools, (4) providing housing for students and faculty in areas where it is needed, (5) adding several vocational centers, (6) providing necessary classroom and school equipment, (7) increasing the number of school supervisors or inspectors and school social workers, (8) improving the educational qualifications of all teachers and gradually replacing non-Saudi faculty at the secondary level, (9) expanding health, school meal, and transportation services, and (10) conducting studies on drop-out and failure -- i.e., educational wastage -- and devising solutions so that by 1980 success rates will have jumped by several percentage points. Systems of reporting and communication from level to level of the administrative system are also under study, with a hope of simplifying procedures and improving information flow.

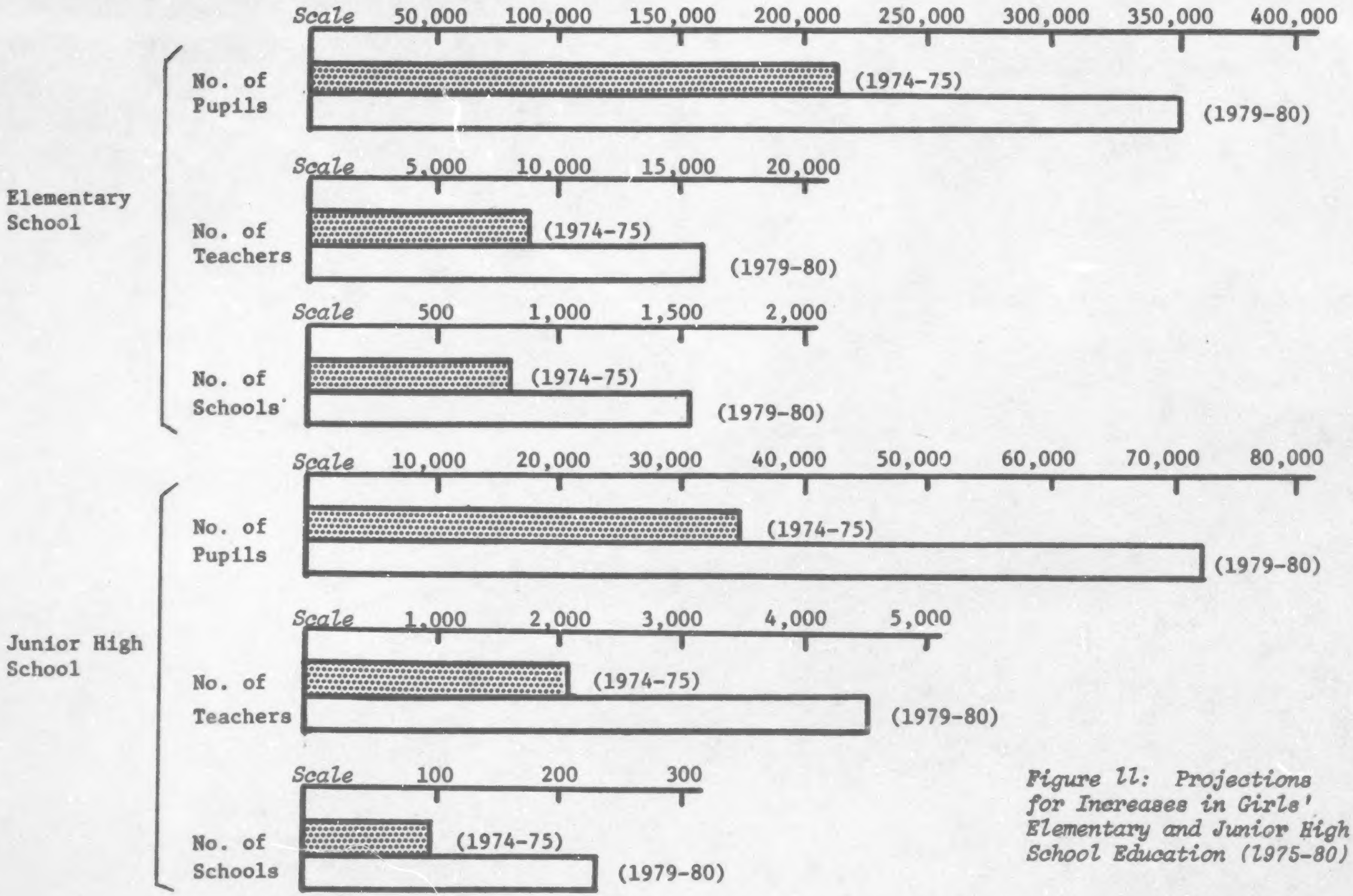

Figure 11: Projections for Increases in Girls' Elementary and Junior High School Education (1975-80)

(Source: The Role of Education in National Development, Ministry of Education, Second Five-Year Plan

Women's Literacy Programs

Literacy training for adults is a continuing problem in Saudi Arabia, but remarkable progress has been made over the past two decades. Because of the high priority which has traditionally been given to the education of boys, women have been especially over-represented among the illiterate. In 1972, a royal mandate (Law No. 523) was issued to require adult women's literacy education, and five schools opened with an enrollment totaling 1,400. The Directorate for Girls' Education is charged with development of the learning programs for these adult women.

Until 1977, the curriculum for literacy education for adult women was the same as for men. However, on the basis of reports from teachers and inspectors working in the field, an administrative decision was made to make several important changes which would strengthen the women's program.

The process of curriculum development, after the initial data collection, was scheduled over a period of several months. A consultant from the Department of Curriculum prepared an outline of the proposed course of study and rewrote the objectives of literacy training in order to make them specific to women's education. The new plan was sent to inspectors, to implement trials which are to be conducted in 1978. After these months of testing, suggestions from the teachers and inspectors in the field will serve as a basis for further revisions of content, objectives and methods. A full report on the project will be submitted by the consulting curriculum development expert at the end of this developmental period.

Several criteria and procedures were established which the new literacy curriculum was designed to adhere to, as follows: (1) the content should be selected on the basis of its potential appeal to adult women -- e.g., readings on child-rearing practices, or on physical health, or on religious and educational issues of various kinds, (2) the emphasis should be on application of the content to real life problem-solving, (3) the training should not necessarily be terminal, but should lead to intermediate or secondary school certification for those interested in continuing their studies on a part-time basis, (4) financial incentives should be offered for enrollment and completion, (5) the teachers specializing in literacy training should receive a raise of 50 percent, and (6) the textbook to be prepared must be simple enough to comprehend but also presented in an interesting fashion.

The classes are taught in the early evenings, from four to seven p.m. The duration of the program is four years, and it culminates in literacy certificates and, for some, elementary education certification. In a cooperative effort mounted with the help of the Ministry of Information, educational programs meant to reinforce basic academic information are made available by means of radio and television broadcasts. The mass media has also been enlisted in the effort to encourage adults to enroll. Even private schools are required to conduct literacy training. The penalty for not complying is loss of government financial assistance.

The planners in the Directorate participate in all national literacy conferences and in meetings with international agencies. A recent meeting, the Arab Conference for Women's Literacy and Its Role in Improving the Economy, dealt with the importance of teaching women to participate in the development of the Arab society, discussed progress to date, assessed some of the problems and constraints encountered, and discussed ways in which Arab nations might cooperate to achieve complementary literacy programs. The outcomes of the conference were phrased as a series of recommendations. The first priority, according to the participants, is to look at the problem of literacy training holistically, in both quantitative and qualitative dimensions , and to relate it to the social and economic developmental thrusts of the Arab world as a whole. Literacy training is to be viewed as a necessary accompaniment of progress, and it is important to consider women's literacy as vital to the education of young children in the home, to the development of skills of social communication, and to the general enlightenment and progress of the Arab society.

A primary goal in women's literacy education, as in men's, is to give elementary school drop-outs a second chance to acquire basic academic skills. Since it is the obligation of all Moslems to become educated, the failure or dropping out of school of young learners and older learners are both taken very seriously.

The new and separate curriculum for women's literacy education is in part based on the assumption that the lesser exposure of women illiterates to the world outside their homes has placed them in a very different state of mental maturity than that exemplified by male illiterates, and that as a result, it makes sense to begin at different points and cater to different interests in the course of the training.

The four-year program is divided into two levels: the first, for basic literacy certification, and the second, for attaining elementary education equivalency. Table 23 shows the distribution of hours per week in each subject area, for a total of 15 hours.

The objectives of literacy and adult education are stated as follows:

1. strengthening religious values and attitudes;
2. study of religion and shari'a, with memorization of those parts of the Qur'An most fruitful for spiritual development;
3. development of reading and writing abilities in order that the student will have a life-long enjoyment of reading;
4. acquisition of basic skills of calculation and elementary geometry as needed for productive life;
5. acquisition of knowledge in social, cultural, and physical aspects of human life;

6. development of active belief in and practice of Islam, as a source of inspiration to others;
7. development of an understanding of Islamic and Arab history and progress;
8. development of numerical and communication skills necessary for daily life;
9. development of understanding of basic health standards, cause and symptoms of disease; home nursing principles, etc.
10. acquisition of a more holistic awareness of interpersonal and environmental surroundings, as a way of contributing to the welfare of the family as a whole;
11. development of understanding of basic home economics;
12. acquisition of good habits in the management of household finances and problem solving; and
13. development of self-reliance, character, and independence of opinions.

Table 23: Distribution of Hours, First and Second Level Classes for Women's Literacy Training, Saudi Arabia

	first level		second level	
subject	1st year	2nd year	1st year	2nd year
Religion				
Qur'An	2	2	1	1
Religious education	2	2	2	2
Subtotal	4	4	3	3
Arabic language				
Reading and writing	8	-	-	-
Reading and memorizing	-	3	2	2
Dictation and handwriting	-	2	1	1
Grammar	-	-	2	2
Comprehension	-	1	1	1
Subtotal	8	6	6	6
Social science	-	1	2	2
Health and science education	1	2	2	2
Mathematics	2	2	2	2
Grand Total	15	15	15	15

Source: "Curriculum for Literacy and Teaching Older Women," Directorate for Girls' Education and Directorate for Textbooks, 1977.

In general, teachers are directed to distribute the curriculum content carefully over the school years and the two levels, and to build the students' confidence that they can achieve the goals of the program. The teachers are to serve as real-life examples of women's achievement and of women's abilities to learn from mistakes and overcome fear of new situations. Care must be taken not to produce an information overload, and the climate of the classroom should be open and inviting of discussion. The contributions of these adult women must be respected, and their new learnings must be based on what they already know. The ultimate goal is that those who complete the program will have learned the process of logical thinking and of making sound judgments accordingly.

Figure 12 shows the numbers of students, teachers, and teaching facilities involved in women's literacy and adult education in 1974-75 (dotted areas), along with projections of what is to be achieved by 1979-80. The lower half of the figure shows literacy training for men in the same time periods. Different scales have been utilized for space reasons, and this distorts somewhat the intended graphic comparison. Nevertheless, it can be seen readily that the rate of growth for men's literacy training is much lower than that for women. The most obvious reason for this is the compensatory effort being made to overcome the lag which women's education has suffered in the past. Another reason for the difference in rate of growth may be that men's literacy training is often associated with vocational training and is conducted under the auspices of the Department of General Culture in the Ministry but also under the direction of the Ministry of Agriculture and the Ministry of Labor and Social Affairs. Community Development Centers offer three-month summer courses in literacy and manual arts for men in villages and remote areas of Saudi Arabia.

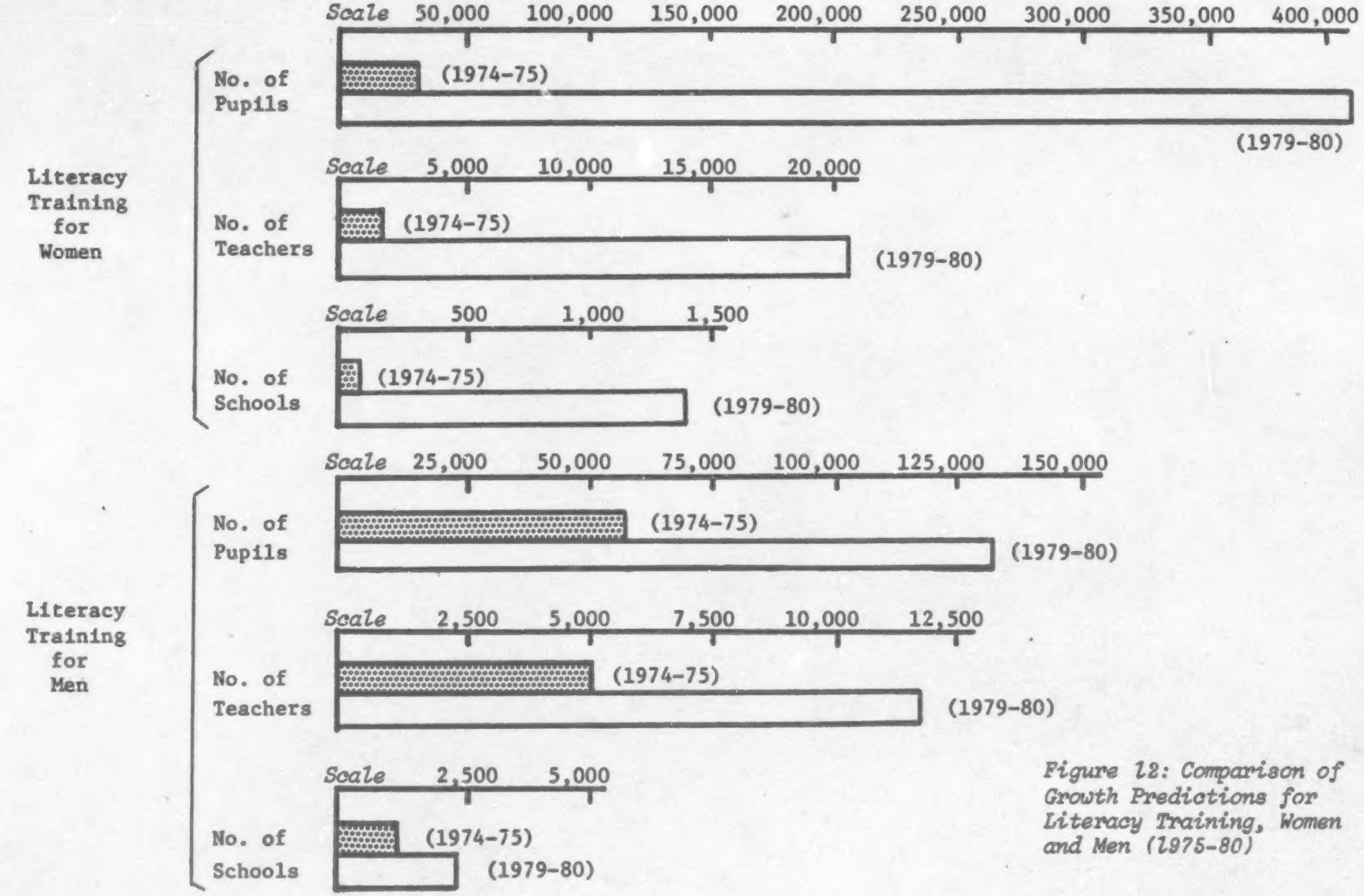

Figure 12: Comparison of Growth Predictions for Literacy Training, Women and Men (1975-80)

(Source: The Role of Education in National Development, Ministry of Education, Second Five-Year Plan)

Planning for Future Educational Development

In 1958, there were only 20 elementary and intermediate schools in the Kingdom of Saudi Arabia; now there are over 4,000. Village settlements, encouraged by King Abdulaziz Al Saud after unification in 1932, have made it possible to establish schools close to populations in remote parts of the nation. A number of new facilities for higher education are planned, as well as new vocational schools and training centers. Despite the phenomenal growth of the educational facilities and of training programs for faculty to staff them, it is estimated that in the year 1980, Saudi Arabia's available manpower will still not meet projected demands. In fact, the predicted short-fall is 150,000 workers. As a result, quantitative expansion of education to provide skilled labor will continue, even as educators turn more specifically to large scale curriculum reform and other qualitative improvements in the separate male and female school systems.

One of the apparent difficulties in the coordination of manpower development is that vocational training programs are presently run independently of the formal educational systems, though the trend now is to create vocational schools which will focus on future development of a skilled labor supply. Another problem is the relatively lower status which vocational schools tend to have in the eyes of parents and students, as compared with higher institute science or university training. A few vocations are favored, however. Secondary school industrial, commercial, and administrative education is growing, and the initiation of the junior college system for extending teacher training is evidence of the demand for improved vocational preparation of school faculties.

By 1980, it is expected that over half of the population will be educated at least at the level of secondary school. Plans call for an increase in educational expenditures up to 25 percent of national income, to provide primary education for an estimated 677,458; intermediate education for 127,136; and secondary education for 39,875 students in the 1979-80 academic year.

Curriculum development projects during the period of the current Five-Year Plan, by levels, are as follows:

Elementary School

1975-76	Study of academic wastage
1979-80	Full evaluation of the examination system

Intermediate (Junior High) School

1975-76	Addition of subjects relevant to students who will not continue their education beyond this level, as well as subjects needed for those who will proceed to high school
1976-77	Use of new texts; teacher training in new subject areas; implementation on a trial basis
1977-78	Comparison between old and new systems, and decision as to to whether innovations should be retained

High School

1975-76	Generalizing of curriculum changes which were begun in 1974-75 in the first grade level; appropriate teacher training; visitations to other countries; importation of consultants
1976-77	Generalization to the second grade level; teacher training
1977-78	Generalization to the third grade level; teacher training; studying of possibilities for comprehensive education to meet different objectives
1978-79	Teacher training and textbook implementation to begin on an experimental basis

Other

The Center for Educational Television in Riyadh, established in 1975-76, is preparing instructional programs for selected schools which are participating in field trials of television instruction effectiveness.

Language laboratories are being added to school facililties, and new schools are being constructed as modular or multi-purpose buildings.

Recreational and sports facilities are expanding, and their use is extended through the months of school vacation.

Scholarship programs for advanced study abroad are continuing.

Efforts are being made to improve teacher-administrator relations.

Reorganization of the Ministry and re-examination of the functions of each unit has itself taken place within the current planning period and important mechanisms are now in place to initiate and monitor the massive curriculum reform which is proposed. With the use of model schools for curriculum experimentation and with a determination at Ministry level to prepare a new generation of Saudi Arabians whose social, scientific, and technological understandings are appropriate to life in the modern world, there is assurance that the nation is moving beyond the era of monumental educational proliferation toward the development of a qualitatively different educational system. The Saudi aspiration is to preserve its religious and cultural heritage with dedication and watchfulness, but also to take its place as an educated, effectively organized contributor to Arab unity and to the international community.

Chapter 8

THE CASE OF TUNISIA

Introduction

Like many other nations which have recently emerged from the colonial era, Tunisia is mounting an educational campaign to confront illiteracy issues, manpower needs, social democratization and a host of other modern problems and trends. There is strong national feeling that schools should be made more responsive to the political, social, and economic pressures which are forging a new society. With a population in excessive of five and a half million, increased by more than a million in the nine year period between 1965 and 1974, the demands on educational resources are growing. Students enrolled in school at elementary and higher levels increased by approximately 300,000 during the same period.

Tunisia is concerned not only with nation-building and mass education but also with the quality of both efforts. The educational planners in this country recognized early the necessity for training curriculum development personnel, establishing a facility and allocating resources to do this. UNESCO assistance has been utilized also to help expedite curriculum change processes.

Because it depends on governmental funding and direction, Tunisia's educational policy-making and initiation of innovation is largely centralized. There appears, however, to be a strong trend toward involvement of representatives of non-educational institutions (such as industrial leaders and other concerned citizens' groups) in the educational planning process. There are also strong decentralized subunits of the total educational system which have responsibility for specific geographical or population areas.

The basic mission of the Ministry of National Education is to provide equal educational opportunities for all children, male and female, regardless of religion or social class, at all levels of schooling. The impetus came with the achievement of Tunisian independence. In 1958, the government enacted a new law facilitating the development of elementary education. Other legislative mandates have improved higher education opportunities and have led to redesign of the organizational structure of the Ministry itself. In fact, over the past twenty years there has been revolutionary reorganization of Tunisian education generally, opening the system to the understanding and use of modern technology within a developing framework of national cultural values and traditions.

The changes within the Ministry have purposefully created a management group capable of interpreting national educational policy and translating it into action. Within the last five years, there has been a conscious effort to develop decentralized local educational administration units which include the schools themselves and regional authorities for teaching supervision. Many of these changes are aimed at increasing school enrollments, giving local communities more control over financing and use of funds, and promoting coordination of innovation and administration throughout the country both vertically, to and from the central agencies and from one educational level to another, and horizontally, across school systems at a given level.

For the first time, vocational and technical education has emerged as a vital constituent and has taken a prominent place in the educational structure. As national leaders have become conscious of the need for skilled manpower and a well-educated citizenry, efforts have increased to actualize free, universal education and to establish firm links between the schools and their efforts and Tunisia's social and economic progress generally.

Financing the Schools

The estimated public expenditures for education in Tunisia are shown in Table 24. The totals are expressed in dinar, in thousands. Between the years 1965 and 1974, expenditures at all combined levels of education more than tripled. In the same time period, the percentage allocated to preschool and primary education dropped, but the percentage of the whole which was spent on secondary education increased.

Table 24: Estimated Public Expenditure on Education in Tunisia (in thousands) and percentages by level

year	total in dinar	first level[1]	second level[2]	third level	other types of education[3]	expenditures not allocated by level
1965	20,278	53.1	34.2	6.3	data	6.4
1973[*]	56,994	39.0	44.1	15.0	not	1.9
1974[*]	65,394	39.1	43.0	15.7	available	2.2

[*] For both years, these are expenditures of the Ministry of Education

[1] includes preschool and primary

[2] includes general, teacher training

[3] includes special education, adult education and similar institutions

Source: UNESCO Statistical Yearbook, UNESCO Paris, 1976, p. 406.

Table 25 indicates the proportions of educational expenditure in relation to gross national product (GNP) and to the total of all public expenditures. Gross amounts of operating and capital costs are given by years. It is apparent that, though total expenditures have more than doubled between 1964 and 1973, the amount of outlay for capital investment has decreased. The emphasis has clearly been placed on educational program development rather than on extensive building and equipping of new educational facilities.

The total as percent of all public expenditure is high in comparison with many other developing and even more industrially developed nations, and it plainly demonstrates Tunisian commitment to improving the educational process within the country.

Table 25: Total Public and Current Expenditure and Capital Expenditure (in thousands); Percentage of GNP; and % of all Public Expenditure : Tunisia

year	total expenditure (in dinar)*	current expenditure (amount)	current expenditure (as % of total)	capital expenditure	total as % of GNP	total as % of all public expenditure
1964*	29,765	18,900	63.5	10,865	6.5	---
1971	53,260	44,760	84.0	8,500	6.3	21.1
1972	60,098	51,367	85.5	8,731	6.0	22.1
1973**	63,664	56,446	88.7	7,218	6.0	20.3

*Expenditure of the central or federal government only

**Expenditure of the Ministry of Education only

Source : UNESCO Statistical Yearbook, UNESCO Paris, 1976, p. 377.

Enrollment

The most dramatic increase proportionally in numbers of people seeking education opportunities in Tunisia during the years 1965 to 1975 has been at the third level, involving special education, adult education, and similar institutions. The reported figures show a doubling of enrollment at this level and a sharp rise in teaching staff to accompany it. Table 26 (p. 273) indicates also that numbers of elementary students jumped by 200,000 and second level enrollments increased by about 83,000.

Although pre-primary enrollments grew rapidly during the years 1966 to 1968, up nearly 2300 students, only 15 teaching staff members were added. Ten thousand additional teachers were employed at the elementary level between 1965 and 1975, but the increase in second level teachers is not indicated in the table. The most obvious pressures on the overburdened school system are at pre-secondary and post-secondary levels, and the elementary cycle in particular has appropriately received a large percentage of the attention and efforts of national educational leadership. Whether this attention has itself increased enrollments or whether growing enrollments have demanded that increased attention should be paid to this level is not perfectly clear, but it seems likely that the paired trends are mutually causal.

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*The Tunisian dinar converts to $2.10 in U.S. currency.

Pupil-teacher ratios at this level are inordinately high, and the need for expansion and upgrading of elementary school teacher training and absorption into the public economy is obvious. That this has begun to happen is equally apparent, as numbers of students per classroom have dropped steadily since 1965 (Table 26, p. 273).

The organization of schools regularly provides six years at the elementary level, seven years at the secondary level, and four to five years of study are required in various kinds of higher education. Entering age for elementary education in six years.

Coeducational schools "present no problem" at the elementary level, according to a recent publication of the Ministry. In other words, some schools accept both male and female students and some do not. At the level of higher education, all schools are coeducational.

The Management System for Education in Tunisia

As is customary in nations having central ministries, the Minister and Deputy Minister of Education are politically appointed. There is

Table 26 : Number of Pupils and Teaching Staff on the Three Levels of Education in Tunisia

year		no. of pupils	no. of teaching staff	pupil/teacher ratio
Pre-primary education	1966	11,089	421	1:26
	1968	13,436	436	1:30
First level	1965	734,138	13,200	1:56
	1970	936,704	19,712	1:48
	1974	910,532	22,225	1:41
	1975	932,787	23,320	1:40
Second level	1965	101,006	5,790	1:17
	1970	193,695	---	---
	1974	196,647	---	---
	1975	183,857	---	---
Third level	1965	5,629	326	1:17
	1970	9,600	---	---
	1971	---	628	---
	1972	9,246	884	1:10
	1973	12,077	---	---

Source : UNESCO Statistical Yearbook, UNESCO Paris 1976, pp. 124, 138, 170, 232.

also, directly under the jurisdiction of these officials, a coordinating committee or unit which has responsibility for linking the Ministry objectives and the means for accomplishing them. This unit has access to the National Committee for UNESCO in Tunisia. In the organizational chart labeled Figure 13, synthesized from interviews and from a 1977 publication of the Ministry, a two-tiered arrangement of centralized and decentralized agencies is shown. What is called here the "Objectives Division" and the "Means Division" represents the horizontal grouping of these structures by function.

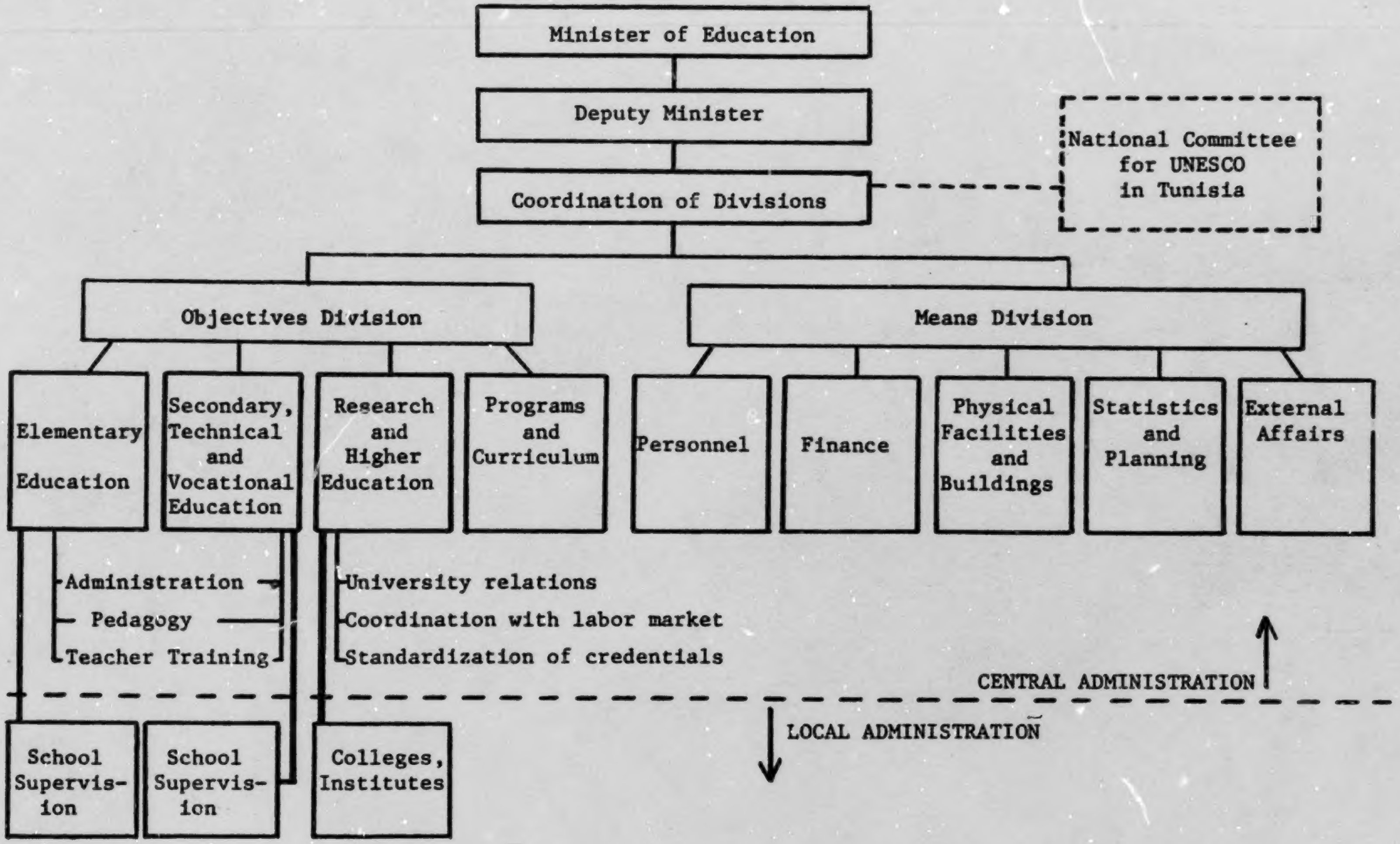
Minister of Education
Deputy Minister
National Committee for UNESCO in Tunisia
Coordination of Divisions
Objectives Division
Means Division
Elementary Education
Secondary, Technical and Vocational Education
Research and Higher Education
Programs and Curriculum
Personnel
Finance
Physical Facilities and Buildings
Statistics and Planning
External Affairs
Administration
Pedagogy
Teacher Training
University relations
Coordination with labor market
Standardization of credentials
CENTRAL ADMINISTRATION
LOCAL ADMINISTRATION
School Supervision
School Supervision
Colleges, Institutes

Figure 13: Organizational Structures for the Educational System in Tunisia
Sources: Interviews and "A Report on the Educational System in Tunisia." Ministry of Education, report 1977.

That Tunisian education is both centralized and decentralized is illustrated on the chart by the dotted line which conceptually (but not organizationally) separates central administrative bodies. The decentralized units distribute pedagogical, financial, and administrative decision-making more democratically.

In addition to the national educational agencies located centrally within the Ministry of Education, there are 22 regional educational supervisors or inspectors located in such a way as to serve geographical districts or population centers. Such supervisors work administratively under the jurisdiction of the provincial government, and all provinces have such designated educational leadership. A particular supervisor may, however, be responsible for more than one of the 18 provinces.

Within the Division in the Ministry of Education which is concerned with reaching educational objectives for all levels of schools in Tunisia, there are four separate units: (1) The Department for Elementary Education, (2) The Department for Secondary and Technical Education, (3) The Department for Research and Higher Education, and (4) The Department for Programs and Curriculum. Each of these departments or central agencies, headed by a director and assistant director, is further subdivided into three functional units: (1) Administration, (2) Pedagogy, and (3) Teacher Training. There are other chief administrators for these subdivisions. Although the four major departments in the Division are separate entities, each with its own personnel and responsibilities, their structural similarity makes it possible for them to work cooperatively as an integrated division.

The Department for Research and Higher Education is specifically responsible for standardization of credentials, university relations, and coordination of programs according to the needs of the labor market.

Other major institutions which are related to the Ministry organization and facilitative of educational goal attainment are the National Center for Pedagogy, which prepares instructional media and texts; the National Institute for Educational Science, which is concerned with research and evaluation at all levels of elementary and secondary education; and the Secretariat for University Projects.

Responsibilities of Pedagogy Component, All Units

Each of the subdivisional units responsible for Pedagogy have two main responsibilities : to initiate or activate educational projects and to conduct investigation and supervision activities connected with the operation of schools at the various grade levels or of the particular school type (e.g., vocational) which are within its purview. The activities which are classified as activation of pedagogy are increasingly fluid, rather than static, so that innovation is occurring at a rapid rate. In the last few years, 30% of the national budget has been earmarked for education (about 8% of the GNP or Gross National Product), and this high prioritization of education at the national level has precipitated large scale reform, accomplished in several successive stages.

Arrangements for supervision of the school systems within its particular level or jurisdiction is the second major responsibility of the Pedagogy units housed in each of the departments of the Objectives Division of the Ministry (see Figure 13, p.274).

School supervision for the whole Republic is based on a three-level hierarchy. There are supervisors at the provincial level, supervisors at the district level, and there are also assistant supervisors who are located in the schools. The latter are usually master teachers who can assist other instructional staff to utilize new materials or develop new skills and methodologies.

Teacher Training, All Units

The third major subdivision of the departments within the national Objectives unit, in addition to Administration and Pedagogy, is the subdivision for teacher training. This component has the further task of supervising examinations. For example, the Teacher Training subdivision of the Department of Elementary Education maintains a special unit charged with responsibility for the competitive examinations which are required at the end of the sixth year of schooling. These examinations determine finally which students will go on to further education, whether to high school, to teacher training institutes, or to technical education.

The Teacher Training subdivisions supervise the institutes which train teachers to serve in primary, secondary or higher education cycles, as their jurisdiction demands. The unit for teacher training is typically engaged in initiating or cooperating with special projects or research which is based at these teacher training institutes. The role of the unit's personnel is both evaluative and innovative.

The Department for Secondary and Technical Education

The basic principles and guidelines for secondary education are largely determined by the national priorities expressed in the current Five-Year Plan, and are basically aligned with predictions for manpower needs in the coming years.

In January of 1977, a new special initiative was taken, reflecting the basic consideration that there is need for continuous dialogue between the schools and the economic environment. Professional educators interested in developing new curriculum have taken responsibility for organization, specification of time-tables, and school scheduling of new specializations. There is room within this framework for school principals in technical education to be innovative and to suggest new kinds of training or skill development relevant to local manpower needs.

The Department of Programs and Curriculum

In October 1967, the Department of Programs and Curriculum was created and is now placed under the aegis of the Objectives Division of the Ministry. It has primary responsibility for design of curriculum for the different levels or cycles of education, for evaluation of existing programs at these levels, for innovations concerning teaching methods and for the development of texts and other instructional media, with the cooperation of the National Institute for Educational Science.

The director of the Department has general oversight concerning the curriculum for elementary education, the curriculum in the sciences (e.g., mathematics and physics), and the curriculum in the humanities and social studies, as well as having general responsibility for school supervision. Each of these areas is headed by an Assistant Director. With the formation of this Department, new policies developed by the Ministry of Education can be operationally defined and implemented through direct curriculum change and development processes. Some changes have been conceived of as gradual or partial; others have seemed to demand radical and sweeping change. Among the latter is the current conversion from French to Arabic classroom instruction in such subjects as arithmetic, history, and philosophy.

The Curriculum Change and Development Process

The Department identifies the need for curriculum change from the following kinds of sources:

1. Teaching supervisors' reports, which identify difficulties in specific subject areas in both elementary and secondary education,
2. Results of examinations,
3. New educational policies at the national level, derived from social development of the country (e.g., classroom use of Arabic rather than French language), and
4. Adoption of new strategies for the whole educational system or for a particular level within it.

Much of the recent activity in curriculum development in Tunisia has been centered around identified problems in elementary education. One factor of great concern is the high level of wastage of students (failures and drop-outs) during the elementary cycle. Analyzing this phenomenon, planners have concluded that the traditional elementary education program simply fails to meet the needs of individual students and the needs of the nation as well. Traditionally based on academic skills, at the expense of other developmental learning, the curriculum has not addressed the problems of individual differences and vocational aptitudes, nor the critical need for skilled workers in the Tunisian economy.

Another perceived difficulty has been the teaching of mathematics and science in French rather than in Arabic, making translation necessary for transfer of math-science skills to everyday situations and problem-solving. As a result, intended objectives have not been met and desired levels of competence not yet achieved by the students.

The third major problem concerns both elementary and secondary education, and is also related to the problem of wastage. In the past, virtually the only function of elementary education has been to prepare students for entrance to secondary education. Current thinking suggests that the elementary school must also function as a bridge to the labor market and to a productive work life for all of the nation's children. To fulfull this mission, the elementary school is being reconceived as independent from though continuous with the secondary system.

The outcomes of these problem analyses have been the introduction of manual arts and vocational training emphases at all levels of elementary education, the use of Arabic in the mathematics and science curriculum, and the reorganization of the final years of elementary education to provide different career paths and strategies for those completing their studies.

To accomplish these substantial reforms, it has taken the combined efforts of many educators and other professionals, and it is recognized that the process of change, though underway, is far from nearing completion. Initially, a series of committees were formed, consisting of supervisors and inspectors in secondary education, teachers and assistant supervisors (with a half-time teaching load) in elementary education, and subject matter specialists from universities and higher education. These committees met and studied the broad recommendations of national policy makers and submitted plans for addressing the needed changes. These plans were then considered by a higher committee of consultants drawn from several national organizations (e.g., the Organization for Education and Family), the National Institute for Educational Science, and including also all of the directors within the Department for Elementary Education.

Upon completion of project evaluation, discussion, and revision as needed, the higher committee approved those which carried highest priority and set in motion the processes of implementation. Follow-up evaluation and preparation of necessary curriculum materials were factors included in the overall change and development planning.

Revision of secondary education programs takes much the same form. Committees of five or six people are called together, some selected subject areas are reviewed, and specific changes are proposed to higher educational authorities. Precautions are taken in these committees to make such planning interactive with existing realities of Tunisian life. The issue of "Arabization" of the curriculum, for example, has played a major role in determining directions and priorities for reform. The change-over to nationalist curriculum began in selected grades, with attention paid to four dimensions: (1) developing content congruent with major Tunisian goals and realities, (2) development of the philosophical basis and rationale for curriculum change, (3) actual translation of curriculum materials to Arabic, and (4) publication of the new instructional texts, manuals, and guides. The planners have been guided by several factors which have impact on what is taught and how it is presented, e.g., the necessity to include current events and descriptions of contemporary issues, the changing urban and cultural environments of the students, and the intellectual levels of the students for which the curriculum is being prepared.

Subject areas currently under review are Arabic and French language instruction. Since 1968, science (e.g., physics and chemistry) and new math curricula have been revised, using the same developmental process. Geology has also been partially revised, and economics curriculum at the secondary level has been reconsidered. Several examples of the activities of the Department of Programs and Curriculum and the National Institute of Educational Science are cited below to demonstrate the process of curriculum development more specifically.

1. *The English Language Curriculum Experiment*

On the recommendation of the British Consulate, a cooperative committee was formed for the purpose of curriculum revision in English language instruction in Tunisia. The committee was composed of Tunisian teachers, inspectors for English, and British consultants. Following initial planning sessions, the committee prepared experimental lessons and field tested these on a limited scale in a small sample of schools which were selected as representative of various geographical areas and situations.

As each field trial was completed, the results were evaluated. Once the experimentation was over and findings made available, the participating English teachers were convened for thorough discussion and further evaluation. This group in turn sent its recommendations for revision to the initial committee, where changes were made before the new curriculum was implemented on a larger scale.

2. *The Project in Physics and the Experimental Sciences*

Formerly, the physical and experimental sciences were not introduced to students except in the fourth and seventh years of the secondary cycle (junior and senior high school). Beginning in 1975, however, curriculum planners recommended earlier introduction and continuation of these studies throughout all seven years of the cycle. With approval of the Ministry of Education, a committee was formed to study the proposal in greater depth and to develop an appropriate design to facilitate the suggested changes. The committee was constituted from among professors in higher teacher education programs, faculty from secondary school, teacher training institutes, and subject matter supervisors.

The group specified a rationale and philosophy for teaching sciences more comprehensively at the secondary level, proposed content and possible implementation procedures, and prescribed the tools and equipment needed to carry out the new program. Implementation has been attempted at first on a limited basis, pending results of evaluation. First and second year programs have been assessed, and the third year program is currently under scrutiny. At this writing, texts reflecting the new approach have not been published. The trial lessons, together with evaluation data, will serve as the basis for future text preparation.

The National Institute for Educational Science

The National Institute for Educational Science was established legislatively in July, 1969 to begin assuming specific responsibility for the research and evaluation functions associated with curriculum development and other educational change activities. Another aspect of its mission is the training of educators in educational research methodologies, in cooperation with different institutes and with the various departments of the Ministry. A 1972 legislative act (Law No. 275) gave the Institute further responsibility for the integration of national development goals and philosophies, in educational development planning and research.

The relationship between curriculum development and implementation is also viewed as intimate in Tunisia, and though curriculum change is centrally initiated and obligatory, implementation must obviously occur in decentralized settings. For this reason, the Ministry has adapted the strategy of using decentralized committees for curriculum development work. One province may be primarily assigned to develop curriculum in elementary education subjects, and another may be asked to develop a new mathematics curriculum, etc. The National Institute for Educational Science provides personnel and develops procedures which are supportive of these change efforts at both centralized and decentralized levels.

The director of the Institute is cast in the role of scientific manager, receiving requests from relevant educational committees and scientific groups and coordinating the response to these requests through interactive relationships with both external and internal units. He is the major planner for the nation's educational research efforts and represents the research community in national and international conferences. He has responsibility for all budgetary matters. Although the Institute is in a sense financially and politically independent of the Ministry, receiving its own separate funding, nevertheless the budget tends to reflect priorities and plans established by national educational policies and executed through the offices of the Ministry of National Education. The Institute director is selected by the Minister.

The objectives of the Institute, as specified in a 1976 publication, include the following:

1. Cooperation with different institutions interested in training needed for conferences and committee work, acknowledging the efforts of researchers and encouraging them to raise their own research standards;
2. Evaluation of pedagogical methods in the schools and suggesting

new models, in cooperation with the Ministry;

3. Conducting studies of feasibility for new projects;
4. Participation in the location and/or development of new curriculum resources and materials;
5. Participation in the evaluation of school texts and subject-related media;
6. Consideration and presentation of new methods and modern instructional media (e.g., educational television, modern techniques for improving student motivation, programmed instruction, etc.);
7. Development of new regional centers for research; and
8. Performing a liason role in relation to other national or international organizations and, in some cases, contracting for or offering services.

Although he is both titular and functional leader of the agency, the Institute director divides some responsibility for agency direction with a Scientific Council or committee. The membership of this advisory committee consists of representatives from among the research personnel within the agency and also the directors of each department or center within the Ministry. It has also included representatives from other ministries (e.g., Finance, Health, Agriculture, Social and Cultural Affairs) as appropriate. The Council meets at least twice annually.

The current director of the Institute has initiated the administrative approach called management by objectives. Working in 1976 with an operating budget of 71,230 dinar (exclusive of salaries of agency personnel), several changes have been made in approaches to problem-solving within the agency and in its external relations with others. The director has made himself accessible to researchers and other workers and has sought to define with them the mission of the Institute in terms of modern national educational goals and priorities. A serious effort is being made to utilize present staff and select new personnel on the basis of their research capabilities and experience. The operation of the section concerned with educational documents, books and other instructional aids has been reorganized. New reporting procedures on use and availability of these materials have been instituted. At present, over 5,000 scientific educational publications are on file. A new unit has been constituted which has charge of ordering and distributing relevant publications from both national and international sources.

The monthly educational magazine published by the Institute for the use of elementary and high school teachers has been reoriented toward scientific issues in pedagogy and has been improved aesthetically. Since 1977, the Institute also has charge of preparing educational reports which were previously the responsibility of the National Center for Pedagogy.

Currently, the agency is planning the development of four regional educational materials and research centers. Administrators for these units have been selected and trained intensively in six-week training sessions conducted abroad. Another important project is concerned with operationalizing the closed circuit instructional television system which has already been made available.

One of the implications of management by objectives is that the Institute performs a needs analysis before any research project is approved. Educators and researchers are polled at several levels of the

Tunisian educational system, in order to identify perceived research needs and priorities. The data resulting from this needs analysis is submitted to the advisory group, the Scientific Council, early in each planning year for thorough discussion and further prioritization. The research projects approved may involve the employment of contract researchers from outside of the agency, usually in the problem areas and schools themselves. The duration of each researcher's participation in a project is carefully specified. The Institute seeks to develop a research network and to encourage qualified workers to earn appropriate degrees.

The leadership of the Institute envisions a further stage of agency development -- the gradual improvement of comprehensive planning capability. At present, research and development projects address national priorities but are still basically unrelated to each other in any systematic way. It is felt that the future of Tunisian education depends upon such comprehensive planning as a means for organizing the continuous renewal of educators, school curricula, school objectives, and student learning at every level.

In summary, the National Institute for Educational Science can be seen to play a central role in implementation and monitoring of curriculum and other school changes in Tunisia. Its broad mission is to operationalize government decisions which influence national educational policy. Though it reports to the Ministry of Education in terms of accountability, it has functional responsibility for the research and evaluation aspects of educational development. It plans and conducts field testing of new curricula and analyzes the results statistically. Despite the technical nature of its work, however, it is guided by practical considerations and seeks to devise the most appropriate means for reaching specified goals -- as in the development of student interest in reading or in selecting effective methods for introducing modern mathematics, projects which are discussed more fully below.

1. *The Reading Interest Project*

Brought to the attention of researchers by persistent complaints of parents, the reading interest problem was managed in the following way. First, the National Institute conducted an opinion survey among parents, students, teachers, and other educators, to determine possible reasons why children were not reading voluntarily. A proposal which took into account the presumed causes was prepared, and a pilot study undertaken. The study involved several different grade levels, in city, town, and village school environments. The design of the program was revised subsequent to the collection and analysis of evaluation data, and public discussion was generated through the use of mass media. A new trial, using a larger sample population, was initiated. Follow-up activities included cost analysis, assessment of resources needed, and plans for training implementers. Finally, the revised reading development program was recommended to the Ministry for generalization to other schools throughout the nation.

2. *Introduction of the Class Discussion and Coordinated Learning Methods*

The National Institute of Educational Science has also been instrumental in encouraging the discussion method of teaching/learning in the first and second years of post-elementary education. Again, the change procedure has included experimental development prior to more general use. Modern mathematics was introduced at the fourth grade level in selected elementary schools before the curriculum was generalized nationally.

Another experimental program which has utilized Institute resources is the coordinated learning method in secondary subjects, intended to integrate various subject matters thematically. The Department of Secondary Education proposed this innovation, and requested Institute assistance to devise a strategy and teaching methodology for implementing coordinated learning.

For all Institute projects, an evaluation committee is formed. These committees include subject matter specialists as well as specialists in higher education and educational psychology. The evaluation component has been included in all experimental and field work since 1974, and often includes the use of questionnaires which are to be answered by school personnel. A major project for which the Institute has been responsible is the experimental try-out and evaluation of content and methods in elementary vocational education. A similar role has been played by Institute personnel in the development of Arabic language teaching, a development which added two hours per week of instruction at the level of the first and second years of secondary educaion.

The Pedagogical Experiment in Elementary School Vocational Education

Considering the extent of the problems of educational reform which the nation faced after 1958, it was felt from the beginning that both qualitative and quantitative improvements must be made. Planners were convinced that increasing the enrollments and expanding school facilities would not, of themselves, improve the quality of educational preparation. As a result, a bold plan was devised for introducing training in handcrafts or manual arts and in vocational agricultural and industrial skills as early as the primary level of education. At the same time, planners recognized that basic academic skills could not be neglected, and that elementary education must provide students with the necessary intellectual development appropriate for given age levels and attuned to specific geographical and cultural environments.

ITM, the Tunisian experiment in Initiation of Training for Vocational Education in the elementary schools, had its first trials during 1972. This first effort to integrate academic and work life was a limited one, and the skill training component was located outside of the school setting, in local workships and agricultural fields. Two or three boys at a time were chosen for the experimental program, which was under the joint control of the Ministry of Social Affairs and the Ministry for Agriculture. This was basically an apprenticeship arrangement, and there were many coordination and scheduling problems.

In 1974, after two years of experience with the pilot program, new plans were crystallized. The responsibility for elementary school vocational training was moved from Social Affairs and Agriculture to the Ministry of Education, and the training itself moved into the schools. During the fifth and sixth years of elementary education, students were to meet with a vocational teacher for two hours per week. The purpose was not only to teach skills, but also to make manifest the relationships between these skills and the students' regular academic subject areas. The children were to receive "the total education," with the fundamentals of science, industry and agriculture addressed theoretically in the classroom but also applied practically in the school workshop or on the school farm.

Because adequate workshop and farm resources did not exist in every district, only 10% of the eligible students were able to participate in this second phase of the developing vocational program. There is a current proposal, readied for submission to the World Bank, which requests monies for expansion of the program to other primary schools, in accordance with the overall plan for generalization of early vocational training throughout the country.

Other efforts have been made to open schools to the outside environment. In October, 1977, several schools took part in fostering environmental activities of various kinds and the results are reported as very encouraging. Provincial governors, school principals and representatives from industrial and agricultural groups have been enthusiastic about what is happening, and are encouraging future efforts in the same direction.

At present, planning is underway for a seventh and eighth year elementary school project. There are several apparent virtues of the proposed plan. It would allow students to remain in school for an additional two or three years even if they failed to pass entrance examinations for admission to secondary schools. The general examination given at the end of the sixth year would no longer be the last opportunity for the 60% who typically do not meet secondary school entrance standards at that time. Instead, a student might either choose to repeat the sixth year or to go on to seventh grade. He would be eligible to try the examination at the end of the seventh year, and again at the end of an eighth year. Individual rates of learning would thus be accomodated, and the student would have a total of three separate opportunities to study for and attempt to pass the general examination.

It is not supposed that all elementary students will eventually be able to pass. Therefore, a major focus of the two-year elementary extension will be provision for additional vocational training. Seventh grade will reinforce academic competencies as well as encourage skill development, but the eighth year will concentrate solely on vocational education.

There are obviously implications for teacher training in these new developments, and in fact, some schools have been forced to abandon parts of their new vocational programs for lack of qualified teachers.

Development of the Elementary Vocational Education Program

During the last part of the academic year of 1970 and 71, preparation began for the initiation of training related to the skilled worker job structures. Originally assigned to the Ministry for Social Affairs for development, the first organizational liason with the educational system of Tunisia was accomplished by the formation of a National Department for Vocational Development and Job Opportunities, with the approval of the Department of Elementary Education. It resulted in the first pre-apprenticeship program, conducted outside of the school setting in actual industrial or manual arts workshops.

It soon became apparent, however, that this sort of educational extension did not address a primary objective -- the elevation of manual arts and other vocational education to a par with more formally conceived academic education. Philosophically, both as a tenet of child development theory and as a practical measure for increasing the skilled labor supply in the nation, the emphasis on technically and academically interactive education seemed vital. The primary aim, then, was not simply to provide an alternative education but rather to integrate both aspects of individual development within one school setting.

In real practice, this integration has proved enormously difficult to achieve, in part for reasons which have been identified and reported by the National Institute for Educational Science, ie.:

1. The initial facilities for the development of manual and technical skills were located outside of the schools and beyond their jurisdiction.
2. Instructors had no training in pedagogy; though they were skilled workers in their own right, they frequently could not communicate the necessary information nor transmit the skills effectively to young learners.
3. The program of applied skill practice was not sufficiently related to the cognitive and physical capabilities of the fifth grade children with whom it was tried, and it was often not congruent with their interests.

The Ministry has observed also that the scattered Tunisian population has a further restraining effect on the implementation of vocational education on a large scale.

Present Status of the Elementary Education Vocational Program

As a result of these findings, the applied practice dimensions of the new program are moving into the schools, and teachers are being developed to meet the challenge of national manual arts and vocational education. The teacher training program began in 1974, along with re-evaluation of existing programs and enlarging of agricultural training facilities in two provinces.

Currently, the planners for vocational education are concerned with some important public relations dimensions. One problem is to emphasize the importance of the surrounding environment in developmental maturation of the child. Another is to modify the commonly held opinion that vocational education activities are simply a waste of time. There is need to project the idea that the integration of manual arts and vocational training with traditional school subjects is a dynamic, productive way to learn and a superior sort of preparation for modern life. Planners are also involved in the development of ways and means to generalize the experimental programs so that they would be in place in 95 percent of the nation's fifth and sixth grades by 1982.

What has already been achieved is a transfer of various pieces of the vocational program from the Ministry of Social Affairs and other ministries to the Ministry of National Education, which now has full responsibility for its future. Financing and pedagogical implications have been turned over to units within the Department of Elementary Education. Some funding is channeled to the program from UNICEF contributions.

46 of the 49 training workshops have been transferred to school settings. Planners are assessing the demand for and use of these shops and are considering making them available, on a priority basis, to school drop-outs. Skilled industrial workers who were employed to train students have been almost entirely replaced by vocational teachers and there are only 25 agricultural instructors remaining who are not trained in pedagogical methods.

Two secondary level schools have been reorganized as centers specifically designed to provide manual and industrial arts and agricultural skill training to prospective vocational teachers -- the school at Korba for agriculture and the school at Marsa for industrial arts. The center training period lasts up to one full year. Subsequently, the trainees work with an experienced teacher in actual school settings for two months before they are assigned to their own classrooms or workshops.

Organization of the School to Accomodate Manual Training, Vocational and Industrial Arts Education

Elementary education, free but not yet compulsory, has a history of high rates of failure on national examinations for entrance to preparatory or junior high school education. In June, 1975 the percentage of students completing the examination sucessfully was only 26.3. This discouraging kind of statistic has influenced the belief that elementary education does not yet meet the needs of the vast majority of the population,and has made massive efforts to change the educational focus at this level seem necessary. Re-thinking the mission of elementary education has led to the new emphasis on integration of manual skills and basic academic work, to the proposed extension of elementary grades, to alternative post-elementary school tracks, and to the provision of three separate opportunities to take the entrance examinations for general secondary education.

General education at the secondary level is called "long term high school education." It continues for six or seven years and culminates in either a technical (six year) or a baccalaureate (seven year) diploma. The Ministry has noted that, from 1974-75 to the present, student enrollments have been increasing in technical education and decreasing in the humanities track. In the one-year period from 1975-76 to 1976-77 alone, technical student enrollments have risen from 12.5 to 17 percent, and enrollments in humanities-oriented course work have dropped from 26.2 to 12.1 percent of first level (junior high) graduates. Table 27 below indicates the extent to which even the secondary schools have been reorganized to permit students to elect vocational training.

Table 27: Changing Enrollments in Tunisian Secondary Schools from 1972-73 to 1976-77

type of education	years 1972-73	1976-77
2nd level, general high school	48,682	47,904
Vocational high school*	18,420	45,416
Technical education*	19,237	22,622
Total	86,339	115,942

* indicates marked increases
Source: "Memorandum on the Situation of Vocational and Technical Education in the Republic of Tunisia," Ministry of Education, Tunis, n.d., p. 6.

One of the most significant supports for curriculum change and development is *structural* change within the schools themselves. Change agents have typically discovered that altering content and school texts is insufficient to produce genuine improvement in learning environments and outcomes. Structural change not only demands new and improved physical environments but also suggests a reconsideration of such matters as scheduling practices and length of school day. Failure to attend to these contextual elements has spelled defeat for many curriculum innovations which were positively received and otherwise feasible.

Tunisia's educational planners seem to have taken proper notice of these dimensions. The Ministry indicates that in 1976 a study was conducted concerning the numbers of hours of teaching which were being devoted to specific studies, at all school levels. As a result, several new mandates were issued to re-align school hours in accordance with new educational priorities and to standardize these hours from school to school. More recently, there has been intensive study of the role of media in instruction and the structural changes which are necessary to make best use of media resources and equipment.

Restructuring Elementary Education

At the elementary level, five hours of study per week have been added for first graders, so that they are now in school for a total of 20 hours per week. The additional hours are used to develop basic skills intensively, as in oral and written language practice and mathematics. Two hours per week have been added to the total number of hours in school for fifth and sixth graders, to allow time for applied studies in agriculture and industry.

Another aspect of structural change in bi-lingual or multi-lingual nations is the consideration of language of instruction. The encouragement of reading, noted earlier, is one element of this problem, for available reading resources are not always in the preferred language or languages. Tunisia has addressed the issue of language of instruction by encouraging the use of local dialects in classrooms during the first three elementary years. These years, then, are to serve as a bridge between the language of home environments with which students are most familiar and the language or languages of formal education. Since the mission of the schools is increasingly viewed in the perspective of preparation for life, the use of familiar language appears to be realistic and facilitative of maximum learning in the early elementary grades.

The combined changes introduced by increased hours in school and the use of a preferential language of instruction are demonstrated in Table 28. The hours are grouped in five subject areas: Religion and Citizenship, Practical Problem-Solving, Language Study, Aesthetic and Practical

Education and Physical Education, as shown in Table 29 on page 299.

Table 28: Instructional Hours Per Week and Languages of Instruction, Tunisian Elementary Schools

grade	hours per week by language of instruction		total hrs. per wk.
	Arabic	French	
1	20		20
2	25		25
3	25		25
4**	15	10	25
5**	15	10*	25-27
6**	15	10*	25-27

* 2 hours added recently for hand work (manual training) in schools which have workshop or farm facilities

** Beginning with the year 1978, French is treated as a second language in the fourth, fifth and sixth grades.

Source: "Elementary or Basic Education." Department of Elementary Education, Ministry of Education, Tunis, 1977, p. 3.

The topics in the first category of studies called Religion and Citizenship include study of the Qur'An as it has bearing on personal deportment, citizenship education, history, and geography. Practical mathematics, practical uses of geographical data, environmental awareness and a general scientific attitude toward problem solving are cultivated in the second group of subjects. Language hours are devoted to Arabic and French. Aesthetic and practical education includes songs and other musical studies, hand crafts, and painting. A break-down of hours in school by subject areas and grades is incorporated in Table 29. These should be understood as approximate divisions of time, which would vary slightly within the individual schools and classrooms depending on resources and shops available, but which adhere generally to the standards set by the Ministry. It should be noted that the extra two hours for workshop or farm work in grades five and six are added to studies in the practical problem-solving category.

Table 29: Weekly Schedule of Elementary School Students, By Grades and Subject Areas

subjects	grades 1	2	3	4	5	6
	hours plus min.					
Qur'An and deportment	1+30	2+30	2+30	1	30	40
Citizenship education					30	30
History					45	45
Geography					45	45
Religion & Citizenship Totals	1+30	2+30	2+30	1	2+30	2+40
Mathematics	3+40	3+55	4	3	4+30	4+30
Practical Geography						
Environmental studies		1	2	1	1+30	1+30
Scientific awareness						
Practical Problem-Solving Tot.	3+40	4+55	6	4	6	6
Arabic	9+20	11+35	11+50	7+05	7+05	6+30
French				9+35	6+35	6+35
Language Studies Totals	9+20	11+35	11+50	16+40	13+40	13+05
Music	30	1	1	30	30	25
Handcrafts and Painting	4	4	2+30	50	50	50
Aesthetic Education Totals	4+30	5	3+30	1+20	1+20	1+15
Physical Education				1	1	1
Recess	50	1	1	1	1	1
Grand Total	19+50	25	25	25	25+30	25

Source: "Elementary or Basic Education." Department of Elementary Education, Ministry of Education, Tunis, 1977, p. 4.

The designated structural changes are not isolated from the real demands of the society for more effective educational planning. The truth is that Tunisia, like most developing nations, must find ways to accomodate greatly enlarged student populations and to do a more thorough job of educating them for life in a modern scientific era. Updating figures from the UNESCO Statistical Yearbook for 1976 (see Table 26, page 273) the Department of Elementary Education estimated a total enrollment of 974,618 students in 1977-78. The Department also projected an increase of 46 schools over the previous year. In broader perspective, the physical expansion of elementary education has resulted in 1600 new schools in the past 20 years, for a total of 2,420.

Teaching staff and supervisory personnel are still predominantly male, with female educators representing only 25 percent of the total staffing for the schools. Initially, the need for teachers was so great in the years following the revolution that students were drawn from the top grade of the first secondary level to provide elementary school instruction. This was, of course, an emergency measure, and the practice was ended completely in 1973. Some of the underqualified teachers have since been examined and awarded first level certificates; others have gone on to earn regular teacher institute certification. Foreign teachers have been gradually phased out, and Tunisian teachers who do not attempt to meet minimum standards are also replaced by more qualified graduates.

The goal of the Ministry is to accept 100 percent of all elementary students who apply. Recognizing an earlier neglect of girls' education, the hope is to reach a total of 85 percent of all girls eligible (by age) within the next three years, and to raise the percentage of eligible males enrolled to 95. In 1976-78, the proportion of boys to girls was about three to two.

As reorganizations for mass education have proceeded, concerns for specifying the nature of that education have intensified. The stress on the importance of the elementary period has grown out of the conviction that it forms a complete unit, capable in itself of laying the foundations for useful and effective Tunisian citizenship. It is viewed as a time of life when intellectual awareness and positive attitudes toward learning can be formed, when religious principles and moral character may be established, and when realistic knowledge of one's own capability can be acquired.

Students are provided with various kinds of social aid, such a lunches, stipends, clothing allowances, housing, etc., as needed to encourage their continuance in school. They are rarely expelled from class participation for any reason, and are not asked to leave school except in the most unusual circumstances. It must be borne in mind in this context that the task of the Ministry is to attract more students (particularly in isolated regions), to keep them in school longer, and to make education more responsive to real-life needs and aspirations.

Despite the fact that elementary education is considered unitary and essentially complete in itself, the Tunisian educational planners have by no means closed down access to higher levels of education. The exact opposite is true. Students will now have more educational options than ever before as they complete the six-year basic period. It is realized that, regardless of the introduction of manual arts, agricultural and vocational training in the early years, elementary school finishers are still too young and inexperienced to be gainfully employed. As a result, additional pre-secondary years are planned for those who are not academically oriented or for those who may be learning the required academic materials more slowly than anticipated.

In Figure 14, the elementary cycle and the proposed "bridging" or elementary extension years are shown as they appear in relation to each other. This chart also shows routes of access to the succeeding levels of education.

The Extension of Basic Education

The proposed two-year extension of elementary education was initiated on an experimental basis in June, 1977. Its short term objectives are to continue the years of basic education for Tunisian life, to reduce drop-out and eliminate the phenomenon of repeating sixth grade in order to be able to re-test on the national secondary entrance examinations, and to provide further years in which to develop vocational skills.

A major long range objective is to open the door for further adjustment and readjustment of basic education, as needs appear and after longitudinal study of the results of these first changes. A question researchers will be asking for several years to come is whether the curricular opportunities provided by a seventh and eighth year of basic education has in fact improved Tunisia's manpower situtation, and whether young citizens are actually better prepared to cope with life in the present century. Complementary long range goals are to relate the schools more successfully to local and national environments, to restore to the people an awareness of the importance and dignity of manual occupations, and to encourage juvenile maturation within school settings.

Implementing the new design began in September, 1977, with the addition of the seventh grade to the regular population in the selected experimental school. The curricular program in the seventh year has these major objectives: (1) to provide additional preparation for passing the secondary entrance exams and to acquaint students with the new

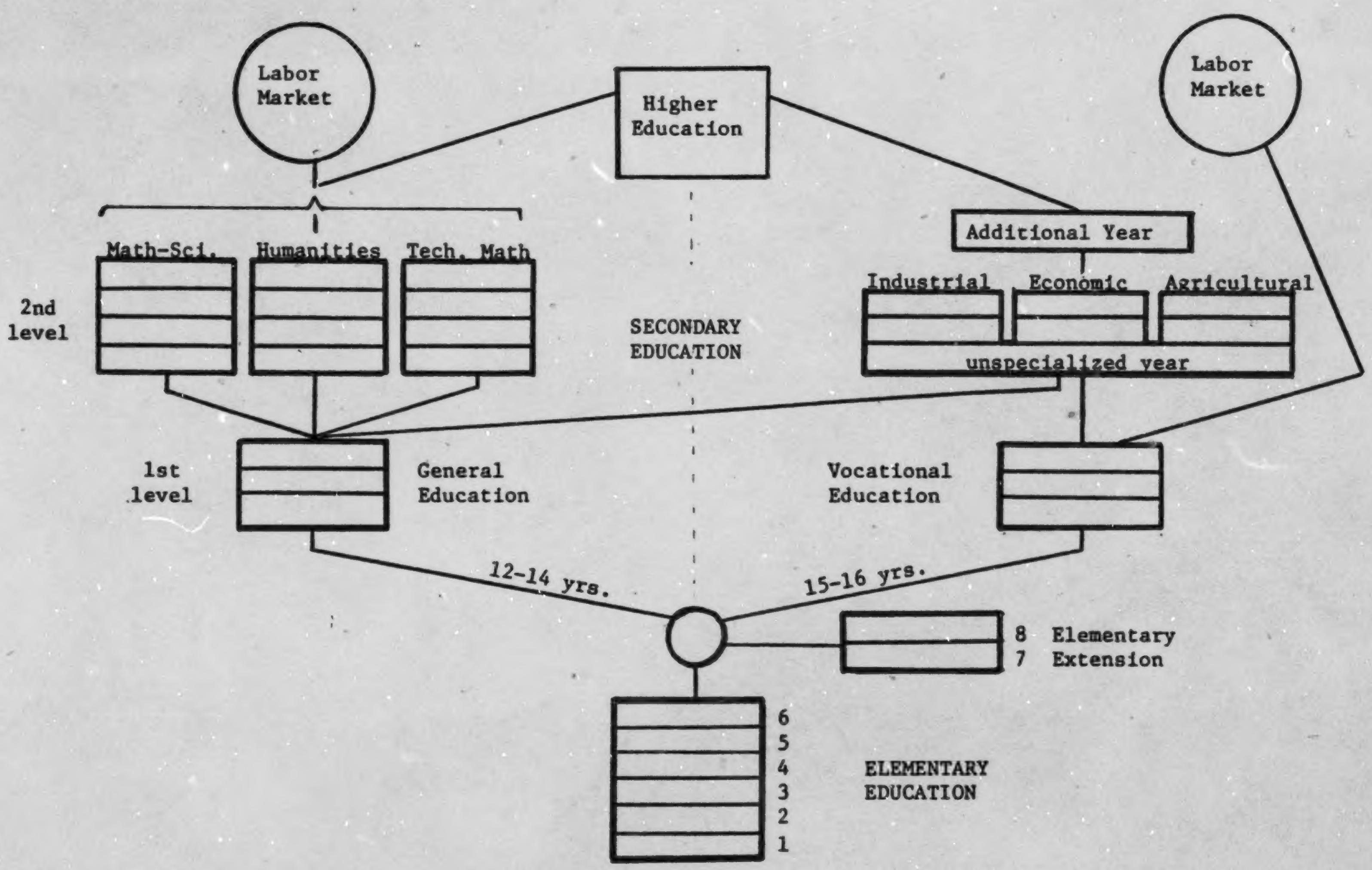
Labor Market
Higher Education
Labor Market
Math-Sci.
Humanities
Tech. Math
Additional Year
Industrial
Economic
Agricultural
2nd level
SECONDARY EDUCATION
unspecialized year
1st level
General Education
Vocational Education
12-14 yrs.
15-16 yrs.
8 Elementary
7 Extension
6
5
4
3
2
1
ELEMENTARY EDUCATION

Figure 14: Educational Ladders in Tunisia

Source: "Memorandum on the Situation of Vocational and Technical Education, Republic of Tunisia, Ministry of Education, Tunis, n.d., p.5 (and interviews).

326

dimensions and opportunities of secondary education, and (2) to add to the students' manual and vocational skill repertoires. The curriculum planners have recognized several potential constraints. Seventh grades cannot be added in schools where an insufficient number of students is available to make a full class. Further, there need to be facilities and staff available to handle the extra class or classes. Of particular concern here is the accessibility of fertile school farms and equipped school workshops. Another consideration is the availability within transporting distance of industrial and agricultural businesses capable of absorbing the students for an eighth year of training upon completion of the seventh grade. It is recognized also that planners must seek to overcome parental resistance or reservations, as well as to enlist the cooperation of local educators and businessmen. As a totally new idea in Tunisian education, the additive elementary years need public support and understanding if they are to prove successful and useful to the society.

It was decided that even if two of the first set of constraints were operating, nevertheless the project should proceed. As an intermediate step, seventh graders would at least be recognized as a separate class, rather than a group of repeaters mixed in with the regular sixth graders. They would be provided with a classroom of their own so that program, i.e., school curriculum, could be differentiated to meet their needs. Students who dropped out of the seventh year could still be directed toward one of the pre-apprenticeship programs.

At the outset, the eighth additive year was conceptualized as a regional, out-of-school experience. Because of the total focus on vocational skill development in this year, planners understood that heavier constraints would be operating. Schools initiating the eighth year would have to be prepared to supervise the out-of-school training experiences, local industrial and agricultural operations would need to accept student trainees by agreement with the schools, and in-school shops would need to be developed wherever possible to supplement the out-of-school job experience.

The Ministry has already had some experience with what is called "post-apprenticeship" training. In a cooperative effort mounted with the aid of the Ministry of Agriculture and several provincial governments, a few work projects were set up in 1975, involving about 170 student trainees. These projects utilized local resources and called upon the schools for staffing and facilities. Some provincial departments provided internships within their own operations. By 1976-77, a total of eleven centers were operational, with a total of 270 students. Outcomes of these experimental programs are viewed as positive, and projected expansions include fishing industries and girls' hand crafts as well as additional technical and agricultural skill training centers.

In long-range planning for the eighth additive year, however, the basic education curriculum design is to move the learners into the school setting. The first schools which will add the eighth year facilities will of course be those which have already successfully implemented the seventh year program.

Sources of funding for extended elementary education are problematic, but several ideas have been advanced. Countryside development funds may be channeled to the program, school budget presently reserved for sixth grade repeaters may be deployed for the additive years instead, and local resource persons may be found who will cooperate on the basis of mutual benefit, reducing the cost to the educational systems.

Important benefits of the elementary extension from the student's perspective are the elimination of sixth grade repetitions and the threefold opportunity to qualify for secondary school admission. Students may take the examinations at the end of the sixth, seventh, and eighth years according to the provisions of the current plan. If the exams are successfully completed when the student is 12-14 years old, he may proceed directly to general secondary education. If he is 15 to 16 years old before he completes the elementary and additive years successfully, he is guided toward vocational education. As noted before, the secondary vocational student is not excluded from higher education if he completes the regular vocational sequence plus a fourth post-secondary year (See Figure 14, p. 303).

Restructuring Secondary Education

The student shift toward technical and vocational education and away from first and second level general education is striking in Tunisia over the past few years. Table 27,(p.296) provides quantitative evidence of this shift. But qualitative changes are also underway, as curriculum development is brought to bear directly on issues of manpower needs, student interests and abilities, improved teacher training, and relevance of education to holistic personal and social development. New vocational specializations are appearing in the schools, and linkages with the industrial, technical, and agricultural leadership in the nation's economy are being deliberately sought and routinely consulted. Again, as in elementary education, students are encouraged to produce real products and participate in skill practice which is realistically tied to actual work life. Girls are gradually being taken into account in this new vocational emphasis, and they are not limited to traditional occupations for women. One of the attempts, already cited, to introduce technical education at earlier levels and in both major tracks of schooling has been the experimental scheduling of physics classes in the first level of general education.

The secondary level is also a prime environment for renewed emphasis on the national cultural and Islamic heritage. In 1975, the teaching of philosophy in Arabic was introduced in the final high school year. History is taught in Arabic in the fourth year, and geography (now taught in French in the first year) is included in the plans for gradual changeover to Arabic language instruction.

Since 1973, there has been a trend in the secondary schools toward the use of formative evaluation and, at all levels, an intensification of written and oral practice throughout the school day and in all subjects.

Accompanying the raising of cultural awareness is a conscious promotion of the social dimensions of schooling in the secondary cycle. School clubs are encouraged and opportunities for physical exercise and recreational games are improving. Courtesy or social education takes place as a part of many activities, particularly in schools where the in-school environment is being considered more carefully. A number of schools have deliberately created student-teacher social "communities," and this effort is to be generalized to other schools.

Again using Figure 14,(p.303) as reference, it is very clear that flexibility in educational goal-setting is one of the primary aims of Tunisia's educational reformers. General education students may transfer to technical schools and technical school graduates may enter a fourth year of high school in order to ready themselves for acceptance to higher education. Completion of a sequence in one track does not mean that a student is thereafter committed to proceeding in the same direction. It is recognized that student interests may change and that new skills may be developed which will re-orient career goals.

The three branches of general education at the second level are more traditionally conceived and are meant to lead to higher education and/or the general labor market which would include professionals and academically proficient workers. The three branches of the second level vocational schools are designed primarily to lead to specific job opportunities and/or to specifically technical higher educational goals. All vocational training leads to technical certification rather than a baccalaureate.

It appears that economics education as a separate branch is being phased out of the general education track and redesigned within the technical education program, as a conscious effort to eliminate overlap. The course work of the technical school economics offering has recently been reevaluated and reorganized in consultation with a group of scientists from the management institutes, making the curriculum more relevant to modern business practices.

The branch designed for technical industrial education has a variable number of specializations, depending on the circumstances and environments of the particular schools. Fourteen of the possible specializations are listed as follows: carpentry and woodworking, stone and cement masonry, metal construction, plumbing, leatherwork, printing, electricity, machine shop, auto mechanics, clothing manufacture, folk weaving, barber and beauty shop work, surveying, and water engineering. Other needed programs may be added by local school authorities as facilities permit. The aim of these programs is to provide middle level (skilled) workers for the national economy.

It should be noted that students are not asked to specialize until after their first year of technical education (see Figure 14). Girls are encouraged to prepare for careers in such fields as electricity, radio and television, and printing. They are not confined to more traditional women's occupations. At this level of education, student-made products are expected to be of marketable quality.

The Ministry has established general procedures for guidance of junior high school graduates toward different branches of the secondary system. A school committee meets to evaluate the progress of each individual student, to assess family or environmental conditions which may be influencing progress or lack of it, and to evaluate other data including student or parental aspirations and Tunisia's social goals. The combined sources of information help the committee to make appropriate recommendations concerning further schooling. This committee consists of the principal, classroom teachers, possibly a school physician, and a parent representative employed by the Family and Education organization.

There are several methods of student evaluation, depending on the nature of the subject. Some assessments are based on written examinations and others are based on tests of practical skill acquisition and performance. Monthly teachers' reports and short school-made tests administered throughout each year are generally taken into account in final evaluation of the student's work.

Reorganization of Teacher Training

Tunisia's most recent emphasis in teacher education is to produce quality instructional personnel, rather than to graduate large numbers. The training program is essentially a four-year commitment and it takes place in one of six teacher training institutes. Two of these are coeducational. There is competition to enter teacher training as soon as the student has completed six years of elementary education. After the years of preparatory work, the trainee takes four years of subject matter specialization and an additional year of training which includes studies in educational psychology, etc., for fifteen hours per week. Even at the conclusion of this period, the graduating teacher is not expected to teach without guidance. Because he has had practice teaching in the fifth year, he is now employed as a regular teacher, but he is nevertheless given continuous and close classroom supervision for one year -- a period during which the teacher trainee is confirmed as a professional through positive evaluations of his immediate supervisor, his principal, and his own self-analysis.

Sincere efforts are made to prepare teachers well-versed in the fundamentals of vocational-industrial occupations, in line with the new national policy of integrating academic and vocational elements of education as early as the primary level. Ministry personnel concerned with life-long education as well as staff from teacher training institutes are taking responsibility for conducting seminars related to this new kind of teacher responsibility.

Teachers are also required to develop bi-lingual skills, both in light of the new demands for Arabic as the preferred language of instruction and in light of the present reliance on French instructional materials and French staffing at higher levels of education. In the academic year 1977-78, a total of 1987 students were enrolled in the four-year basic teacher education program, and 660 were completing the fifth year -- 304 in French language instruction and 356 in Arabic. Upon certification, some teachers continue study in Europe.

Future Plans for Curriculum Change and Development

The Ministry anticipates that, with the percentage of foreign teachers gradually decreasing (16.54 percent of the total in 1977), by 1981 all teachers will be Tunisian nationals. Non-certified teachers will be encouraged through promotion incentives to upgrade their skills, and the facilities expansion program will have provided many new schools and laboratories for the implementation of improved educational programs.

There are plans for increasing the numbers of teaching supervision personnel, and the decentralization of school supervision to local levels will help to facilitate close contact with new teachers and with teachers involved in self-improvement of instructional skills. Pedagogical literature will be made more readily available, and both public information and public consultation on curriculum matters will be intensified. Development of new texts will proceed as rapidly as possible, considering the need to define experimentally what these texts should contain. General science texts and manuals for industrial arts and vocational training will include both theoretical considerations and examples of how these theories are practically applied. Purchase and use of audio-visual aids will be expanded as rapidly as budget constraints permit. Geographically isolated schools will be given particular attention in the general context of school reform.

The current Five-Year Plan aims at reaching many objectives which have implications for curriculum change and development. A "Memorandum on the Situation of Vocational and Technical Education in the Republic of Tunisia" states the following goals as critically important to Tunisia's future:

1. Improving the quality of teaching,
2. Providing vocational guidance which can be of more specific help to students in their planning for education beyond sixth grade,

3. Encouraging greater interaction among the various institutes and colleges under Ministry jurisdiction, in order to "equalize" the status of different types of education,
4. Developing schools and school specializations to provide training for jobs considered most important to the national economy,
5. Continuing to encourage at least 40 percent of all students finishing elementary education to go on with vocational training,
6. Making it possible for at least 20 percent of all students finishing the first level of vocational secondary school to continue in the second level,
7. Making it possible for at least 12 percent of second level vocational students to continue in higher education,
8. Opening up more vocational specializations to girls, with the advice and assistance of the industrial and business communities, and
9. Developing a system for monitoring job openings, and seeking to place students in available slots in an effort to bridge the gaps between labor supply and demand. (pp. 6,7)

Several forms of inter-ministry cooperation, as well as Ministry of National Education cooperation with private sector and national businesses, are regarded as necessary to accomplish the nation's goals in vocational and industrial arts education. But Tunisian curriculum development planners and other school experts believe the formidable problems can be solved, and they are continuing their efforts to make schools more relevant to Tunisia's present and future needs.

Chapter 9

Implications of the Study for Future Developments

It is apparent to educators throughout the world that educational philosophies and goals are changing and that systems of schooling must also be transformed in order to articulate these new trends. What is somewhat less obvious is that people today are also beginning to think about curriculum and curriculum development in radically different ways. Curriculum theory and research has shifted from a product orientation to a process orientation, and there is mounting research evidence that *the quality of any curriculum product depends significantly on the quality of the process by which it is created.*

Process itself has become, therefore, a paramount consideration. With this understanding, the study of the curriculum development process clearly takes precedence over all other research concerns, and the alteration of that process is seen to be of even greater importance than the alteration of content and methodology (i.e., courses of study) per se.

In the present investigation, it has been assumed that the processes by which Arab countries renew their curricula are substantial indicators of the directions and effectiveness of the curriculum changes which will actually occur. The spotlight has been trained continuously upon the curriculum developers' functional relatedness to all other persons and agencies involved in the schooling process, as well as upon their own perceptions of how curriculum development work gets done or fails to be accomplished. There has been an attempt to catalogue in detail the array of mechanisms, strategies, linkages, and resources available to curriculum development personnel for the achievement of their critical mission: the renewal and strengthening of the educational process.

When curriculum workers are involved daily in the acts of curriculum production, they often have little time or inclination to review and analyze the change process as a whole. This is particularly true in countries where massive quantitative changes in student populations have forced educators to act quickly, and to act often on the basis of far too little information. Most Arab nations have developed their capability to absorb new students into their formal educational systems and have begun now to turn their attention to qualitative curriculum change. It is at this point that the curriculum change process itself assumes a central significance.

However, there are indications from the survey data and the case studies that Arab educators are still not fully aware of the nature of the change processes in which they are presently involved, much less of the significance which these processes have for Arab education in the future. A coherent overview of the situation is badly needed. Without a comprehensive overview or "mapping" of existing curriculum process events and characteristics, Arab educational planners may remain at a loss to know what elements are functioning smoothly and what elements are seriously in need of redesign. This study is a deliberate attempt to begin this mapping and to provide a solid basis for further process analysis and reform.

It is by no means easy to determine the criteria by which "effective" as opposed to "ineffective" development processes may be defined. The experiences of industrialized nations provide some operating guidelines or principles which may be utilized, however, and other criteria are likely to emerge from the accumulating experiences of the Arab countries themselves. Minimum expectations are that an effective curriculum change process must be well planned, publicly supported, adequately funded, carefully implemented, and even more carefully evaluated. Evaluation must be based not only on concrete outcomes or products, but also on the qualitative characteristics of the process itself as these influence the directions of change, affect its timing, or condition its impact.

Curriculum reform must therefore be viewed as a social process which requires interactive participation of many different kinds and levels of social institutions. It demands that individuals representing a wide spectrum of interests and having special knowledge of the groups to which they belong should be involved in the change process. A primary role of the professional curriculum developer is therefore to provide a variety of opportunities for people to engage in the actual formation of plans. He does not ask them solely to consume or utilize what others have planned for them.

From the weight of evidence, it appears that curriculum change and development activities in Arab countries are handicapped by common deficiencies in several critical processes. For conceptual convenience, these deficiences have been categorized as follows: (1) deficiencies in *image*, (2) deficiencies in *support structures*, (3) deficiencies in *linkages*, and (4) deficiencies in *research and evaluation.*

The Image Problem

Arab educators are beginning to adopt modern definitions of curriculum -- eg., that "curriculum" includes all of the learning experiences a child has while he is in school -- but there is as yet no common understanding of what these new definitions imply for classroom practice. It is often difficult to see or to "image" what kinds of planning are necessary to develop "curriculum" as defined in this less restricted sense, and as a result, curriculum reform is still viewed by many as a process of revising texts and teachers' manuals. Fundamentally, this means changing content, and changing teaching methodologies only to the extent that is necessary to present new content. Where such a limited understanding of curriculum reform prevails, curriculum developers are perceived primarily as content experts, and their roles are defined largely by the demands of subject matter committees.

In countries where a new vision of curriculum development is emerging, there is a growing awareness that curriculum change is a higher order activity, involving political, social, economic and international issues and requiring a new comprehensive set of skills which few Arab curriculum developers have. Responses to the questionnaire are universal in their insistence that there are too few trained curriculum development specialists in the Arab world, and that the few who are available are overworked. Very often, the scope and nature of their work is underestimated or misunderstood both by those who are above them and by those who are below them on the educational hierarchy. The curriculum development specialist who perceives his role as multi-dimensional in the modern sense, typically has the potential for making much more significant contributions to educational change than he is presently encouraged or enabled to do, according to data which has been generated from the survey.

The discrepancy between the way the curriculum development specialist views himself and his role and the way he and his role are perceived by others is a critical one. Until his image and the image the public has of him are more congruent, it is likely that he will be often frustrated in his attempts to design and implement change. In fact, he will be forced to spend much of his valuable time and energy educating others about the curriculum development process itself, if any of his suggestions for innovation are to be taken seriously. What is implied here is that the curriculum development specialist is a middleman -- a person who, by virtue of his position in the educational hierarchy has a pivotal role to play. He must be able to establish a viable conceptual framework and to convince those above him and below him (administratively speaking) that he has an accurate sense of what educational changes are needed and how they may be accomplished. If he is to perform effectively, he must be given greater credibility, more resources and more flexibility. He must have the autonomy and authority to manage the curriculum change process as a coordinated system rather than a "band-aid", piece-meal operation.

The Problem of Establishing Support Structures

Changing the popular image of curriculum making and curriculum makers is a vital necessity, but it cannot be considered a "first step", to be accomplished in isolation from other tasks. The dynamic process of curriculum change in the Arab world requires that simultaneous activities should be occurring, in many different directions. Since curriculum development personnel are potentially a nucleus for change, an infusion of new life into rigidly solidified educational patterns, they are also potential generators of new curriculum support structures. The new breed of trained curriculum specialists is acutely aware of its enormous responsibility for designing, nurturing, and monitoring the educational process. In very few cases, however, are these new professionals given the kind of support and recognition which is needed to facilitate their work.

Most Arab curriculum development units do not even have a separate administration structure which allows them to plan their work and allocate their personnel and other resources in an efficient way. Research facilities are inadequate, non-existent, or inadequately linked with the curriculum development process. Although there is growing recognition that there is no escape from the use of technology, if Arab countries are to meet the educational needs of growing populations, there are severe shortages of educational technology personnel and of functional organizations within which they could work to support future educational growth and change.

The likelihood of securing carefully planned budget allocations is in many ways intimately connected with the degree of success with which curriculum developers are able to communicate the image of their new roles and expanded functions. The budgetary needs of "content experts" and of curriculum development activities in the broader, modern sense are very different, and it is imperative that these differences should be recognized at ministry levels. Serious and complex curriculum development efforts deserve serious fiscal and administrative support. Such support has not been forthcoming in many Arab countries, most probably because there is still too little understanding among top officials as to what modern curriculum is and what the scientifically oriented process of curriculum change is all about.

At minimum, curriculum development units should be separately funded, staffed with a cadre of curriculum planners and educational technologists who have been trained in modern curriculum change techniques, and closely allied with a national educational research center which also has a sophisticated understanding of the curriculum research and development process. Persons knowledgeable in both aspects -- research and development -- should be given a strong voice among the most authoritative decision makers. Their knowledge and experience should weigh heavily in the process of determining educational priorities, assigning available resources, and generating both new ideas and new curriculum for the future.

The Problem of Creating and Maintaining Effective Linkages

Many levels of educational personnel are involved in the implementation of curriculum changes, but effective communication and rapid information exchange among these levels are often problematic. Directives from upper eschelons in the ministries filter down to the schools after passing through many hands, and feedback from the schools arrives at ministry offices indirectly -- primarily through teaching supervisors' or inspectors' reports or through occasional questionnaires. Aside from the small numbers of subject matter teachers who are asked to participate directly on curriculum committees, school staffs are largely out of touch with and not consulted concerning the development process. Communication interactions among teachers, among schools, from schools to Ministry, and from schools to community vary in frequency and in purpose from country to country, but it is rather commonly found that formal linking structures do not exist. The formation of teachers' centers where ideas could be exchanged, new curriculum materials could be prepared, research designs could be developed, and implementations could be organized, would constitute one approach to the linkage problem. Ways can be found to draw the schools and the communities they serve into closer relationships, and to allow people from these communities to participate in discussions about their childrens' schooling. In Tunisia, for example, manufacturers, agriculturalists, and representatives of the fishing industries are asked not only to help with the planning of vocational education, but also to help provide work experiences for the students. Other nations (e.g., Iraq) report the formation of parent-teacher associations as one type of school-community linkage.

The participation of students in curriculum planning conversations and in implementation efforts is rarely sought, although students are the persons most affected by what is planned and implemented. Student representatives can be effectively utilized in curriculum discussions, if they are persuaded that their suggestions and comments are welcomed and attended to.

Since orientations of all of the "grass roots" groups differ, they serve to balance the orientations of educators and to enrich their understanding of the purposes to be accomplished through curriculum change. Individual participants with different backgrounds are able to contribute information, ideas, strategies and motivation that is otherwise unavailable to planners. Failure to solicit or utilize such contributions keeps societies at a disadvantage, for they are not then able to make the most of their human resources. Restricting access to educational information and technology does not work to the advantage of any person or any nation, in a world confronted with rapidly accelerating social and economic change.

One of the advantages of participative planning is that all aspects of the total system which are affected by the planned changes can be taken into account in a coordinated and interactive way. Planning at every level and in every unit of the system should be integrated with planning at every other level and in every other unit. Domains of interest overlap and so do curriculum development functions. There may even be different directions in the flow of work at different periods of project development. At times, top level administrators may be called upon to help set goals; at other times, they will act only to facilitate goals set at other levels of the educational or other social structures. Similarly, lower level personnel may at different times be involved in both goal setting and in the devising of ways to reach these goals. Whatever role individuals or groups of individuals are playing at any particular point in time, they are most productive if they are kept informed of progress in other parts of the curriculum development process, and if they exercise some decision-making over their own activities. Unfortunately, as the survey shows, Arab educational systems operate most typically in an authoritarian, "top-down" fashion, and are thus deprived of grass-roots contributions. A reform movement which would increase the likelihood of wider participation and distributed decision-making is strongly indicated, if curriculum change processes are to be improved significantly.

The linking role which mass media can be asked to perform is to furnish all media consumers with news about the schools and the changing educational processes. Public opinion can be effectively altered in support of new programs and practices, and even the school children who watch these media presentations can be made more aware of what it means to receive an education in the modern Arab World.

There are crucial linkages at the level of the ministries which reportedly are made only on an occasional basis or which may be neglected entirely in the curriculum development process. These are the connections which link fiscal officers, planners and researchers functionally with curriculum development personnel. Kuwait has established a research center which operates interactively with curriculum planners and developers, and the patterns which this unit is now developing may serve as a prime example of what can be accomplished when appropriate, systems-oriented linkages are in place.

Another avenue for linkage activity is suggested by the creation of the UNESCO Regional Office Network for Innovation. A subsection of this network could be organized along the same lines as the parent network, and charged directly with the facilitation of curriculum development processes on a regional as well as local basis. Curriculum projects might be cooperatively funded by national governments, ALESCO (the Arab League), and UNESCO in order to insure continuity of optimum support. In such a context, all participants would be both teachers and learners, sharing information and development tasks. Cooperative ventures of this sort would tend to eliminate the questionable practice of contracting for curriculum products with firms outside the region.

A linkage problem of special concern is the need to bring teacher training institutes and colleges into closer relationship with curriculum development activities. Faculties and students can be much more systematically, comprehensively, and directly involved in the process of planning and change. The curriculum of these teacher preparation agencies should deliberately include courses in educational technology, curriculum planning, and instructional development, and strong emphasis should be placed upon the role of the teacher as implementer. If curriculum departments were also established at the university level, provisions could be made for continuous on-the-job training and re-training of teachers and curriculum development specialists, thereby continuously renewing the expertise and energies available for on-going curriculum change processes.

The Problem of Research and Evaluation

The practice of curriculum change and development must be viewed not merely as a forced reaction to social change, but rather as a potential producer of creative change in desired directions. It must also be viewed as a continuous process, with results that are never completely fixed or permanent. The dynamics of contemporary social and educational change demand a much higher degree of flexibility in individuals, in institutions, and in the products they develop than was formerly the case. Flexibility as a social or curricular reform principle does not mean that everything old or valued must be discarded. It does mean, however, that what exists must be constantly re-evaluated, and that, upon evaluation, it is likely that much less will be prescribed and much more will be left open to future change. Thinking of curriculum in such a fluid way may at first seem too difficult and risky. But it may be the only way to make education sufficiently responsive to the changing social and information needs of a new and changing world. Continuous curriculum reform seems to be a concept which is particularly difficult for Arab educators to adopt. In part, the reason for this may be the strong influence which national examinations have on curricular thinking. Rigid examination structures tend to reinforce the idea that curriculum has only the purpose of developing subject matter competence, and that curriculum is therefore relatively fixed.

Viewing curriculum reform as a part of the social change process and as itself a producer of change implies that curriculum development has important effects on developers and users alike. It is not possible to leave these effects to chance, if education is to be effective in facilitating human social and personal goals. The application of scientific thinking and technology to the problems and aspirations of Arab education does not suggest that perfect prediction of educational outcomes will be made possible. But there is growing recognition, at least among the participants in this study, that research -- as a scientific thought process and methodology for developing new knowledge -- can remove much of the randomness of and dissatisfaction with current educational practices.

Scientific thinking demands that beliefs must be examined and tested. It is not enough to believe that a new technology or a new book is either beneficial or not beneficial, without having collected data to test positive and negative effects. It is not enough to say that educational television will improve the educational achievements or attitudes of school children, without having made realistic comparisons of the achievements or attitudes of children with and without TV. What the new curriculum developer is forced to do is question his own and others' assumptions at every stage of the development process, if he is to proceed scientifically. It is difficult to accept this challenge of science, when it is so time-consuming, so rigorous and so threatening to educational traditions. But modern curriculum development specialists are, by definition, educational scientists and technologists. The quality of their technology is always dependent on the quality of the scientific thought and methodology that accompanies it. According to responses to the questionnaire, a majority of curriculum developers in the Arab nations are deeply concerned to institute qualitative changes in the theory and technology of curriculum development.

A general systems analysis of the contexts of curriculum planning indicates that there are two general categories of activity: those that have a broad, overall educational development character and those that are addressed to specific curricular issues. The first set of activities may be designated as macro-processes and the latter, micro-processes. In many of the countries surveyed which have centralized decision-making systems, macro-processes are often much more fully developed than micro-processes, where these terms are meant to refer to two different levels of educational planning. Strictly speaking, however, there are both macro and micro processes within each level of the system, so that ministries as well as school faculties ideally perform both kinds of tasks.

An example of macro-process is goal setting, which is appropriately done at all levels of the system. An example of a micro-process element is the production of an instructional graph or illustration. If this production is part of a new textbook, it may be a Ministry task. If it is part of a teacher's individual lesson plan or a poster for a school bulletin board, it is a school level curriculum change micro task. Curriculum development specialists need special organizational, design, and research skills to help coordinate these multiple levels of planning and complex within-level categories of macro and micro activities. In Arab countries, such complex skills are at a premium, and too often must be provided through the use of outside consultants or foreign employees.

Macro and micro planning and development activities imply that at least two different levels of research effort may be involved. However, in the face of the uncertainty and even suspicion with which educational research is viewed in the Arab world (as some respondents stated in the survey) it seems useful to focus initially on the macro level. Macro research pertains to large scale reform projects particularly, such as the institution of the Nasr City, Egypt, experimental school or the introduction of the credit system in Kuwait.

The processes of formative and summative evaluation are especially critical aspects of macro research. Because the data generated by evaluation items on the questionnaire indicated that evaluation of student achievement is very often confused with the evaluation of the curriculum development process and product, a special summary of the major characteristics of these different types of evaluation is incorporated in this discussion. It is offered here to substantiate the researchers' strong recommendation that curriculum developers in the Arab world should be trained intensively in the use of formative and summative evaluation techniques, as an immediately practical way of improving curriculum research skills and conceptual accuracy.

Formative and Summative Evaluation

While the two types of assessment are related, and data from each contributes to the other, evaluation of curriculum process and product is a special obligation of curriculum reformers. Scientifically speaking, logical and meticulous development of instructional programs does not automatically insure that they will be effective ones. The developer will be able to call his product successful only if it accomplishes improvement in the normal population of individual learners for whom it is intended. Consequently, he judiciously makes use of formative evaluation throughout the development process.

The sole purpose of formative evaluation in curriculum development is to provide the developer with data which will help him revise his design and improve the teaching strategies he has suggested. The alternative to formative studies is to assume that a curriculum design is already perfect and will not need revisions of any kind, or to assume that expedience must rule over educational integrity. The use of formative evaluation is not yet a common practice even in the more developed nations. But to do formative evaluation is to dedicate oneself to producing quality educational methods and materials. Experimental evidence shows that testing of prototype plans and strategies and subsequent revisions of those materials on the basis of feedback from the students and teachers does result in much more usable and effective curriculum.

The formative evaluation techniques are equally valuable whether the products to be tested are an entire subject curricula for a particular stage of schooling (macro-process) or a new instructional film or videotape (micro-process). What testing of the process and the product does is to validate or invalidate many of the theoretical constructs which the designer has used to develop the materials, and it also helps to identify alternative constructs and strategies which permit more knowledgeable decision-making. There are typically three phases of formative evaluation: (1) the one-to-one phase, in which the new materials and procedures are tried with from one to three individual learners, (2) the small group phase, in which an experimental group of eight to twenty-four children use the materials in their revised form, and (3) the field testing phase, in which materials are used in a regular classroom by regular learners in a standard type of school situation.

In the one-to-one evaluation, the designer selects an average student or a range of high to low achievement students (no more than three in all) and interacts with them as they use a first draft of the materials he has designed. This is a preliminary testing, the purpose of which is to identify gross errors in his design and to sample the attitudes of a small number of learners toward the materials. On the basis of this trial, he makes obvious revisions and improves the overall appearance of the materials to simulate the end product he has in mind. The revised product is next tested with a small group which approximates a normal classroom population. This second trial is meant to uncover more subtle problems and to analyze the time which is needed for students to complete specific tasks and objectives. The developer/researcher collects data on test scores, has students and teachers fill out questionnaires and answer open-ended questions about their experiences with the materials and then begins a thorough assessment and interpretation of his summarized data. An item analysis helps him determine which parts of the learning experience are not working as intended and may give him clues as to how to change those parts. After this more thorough analysis and revision, he field tests his result, complete with teachers' manuals and other materials. On the basis of what he learns from this testing, he has a valid basis for making decisions whether to generalize the new curriculum or media product to other schools or whether further development and revision is needed first.

The use of formative methods requires the preparation of evaluation instruments such as criterion achievement tests, attitude questionnaires, check-lists, etc. But most of all, it requires a scientific integrity and sometimes a willingness to start over, almost from the beginning, if curriculum design assumptions have been misleading or inaccurate.

Even after a successful field trial which concludes the initial development cycle, a cycle of operational development must proceed. The curriculum specialist who is thinking scientifically knows that he cannot assume that the new curriculum will work in every school setting just because it worked well at the field testing site. Ideally, he will follow the implementation process as the curriculum is generalized to other schools, again using data collection instruments to discover the possible difficulties in implementation and in producing desired learning.

Summative evaluation is more closely related to student test scores, which are used for the purpose of comparing results of different instructional designs and strategies. It is not a part of the curriculum development process in the micro sense, but it does provide information for macro-process change. For example, summative evaluation may help educators to make decisions whether to use one text or another, whether to use lecture or discussion methods, or whether a new set of curriculum materials is needed at all.

It must be said that most educational evaluation is summative in nature. However, this does not mean that summative evaluation is always scientifically conceived and implemented. There are a great number of possible pitfalls in making assumptions and carrying out tests concerned with summative evaluation. A gain in student achievement may not be the best clue and it is certainly not the only clue concerning the value of the new curriculum. Summative evaluation is often done by evaluation experts who have not been a part of the curriculum development process. It is thought that such outsiders have a better chance of remaining objective about the curriculum materials. The questions the summative evaluator asks are of four types: (1) questions about the context of the curriculum, (2) questions about what "raw materials" have gone into the design process, (3) questions about the processes of design and use of the curriculum and (4) questions about the product itself and its apparent outcomes. In the first instance, the evaluator wants to know what goals have been established, what levels of achievement have been reached, whether the product is viewed as helpful, and what the problems with it have been like. In the second instance, he wishes to discover whether the product was field tested, what types of achievement tests and other assessment instruments were used, whether detailed records of procedures have been kept, and whether the comparisons between old and new curriculum have been based on the same criteria. In the third instance, the evaluator seeks information about how the project began, how it was conducted, who was involved, what data was used and how it was analyzed. Finally, he looks at the matter of how closely the product matches the original intention, what the criteria for evaluation have been, what reportage mechanisms have been designed to make results of implementation available, how the new curriculum sequence and materials have been disseminated, and what the experience has been with the new materials in widely separated circumstances and over a period of several months or years.

The summative evaluation report is complex and detailed, but in form it resembles the standard research paper. It describes purpose, methods and instruments; reports the design of the study and the nature of the subjects (students); discusses the methods used and why they were selected; and describes and interprets outcomes of the study.

There are obviously significant differences between formative and summative evaluation. Formative evaluation occurs throughout the curriculum development process and the data generated is used by the developer himself and his associates. The goal is to produce the best, most pleasing and effective curriculum possible. Summative evaluation occurs at the end of an implementation period and the data generated is normally used by centralized administrators and decision-makers, whether at ministry or school levels. The goal is to make comparisons and choose between available alternatives. However, scientific thinking and rigorous testing of assumptions are common to both forms of evaluation. On this basis, it is questionable whether the educational research which is currently being done in developed as well as in developing nations is really adequate. Educational decisions are made constantly on the basis of too little information or, what is worse, on unintentional misinformation produced by lack of data. Arab nations have the opportunity now to institute effective evaluation procedures and to avoid the pitfalls of arbitrary decision making which have plagued, and continue to plague, the industrialized nations.

New Trends in Curriculum Development Technologies

From comparative studies made of curriculum change and development activities in developed countries, several new trends have become apparent. Among these are a willingness to look at a broader range of scientific and humanistic values, theories and technologies as contributing to the improvement of education and educational process. Such trends can and should be analyzed and evaluated by alert Arab educators before decisions are made to accept or reject them.

Curriculum development specialists themselves do not usually constitute a pressure group for any particular style or methodology. However, every experienced specialist has some preferred or especially successful techniques which he has either learned about from others or has created on his own. The capacity for creativity is perhaps underappreciated in the selection of curriculum development personnel, and is even ignored in many training programs. If appreciated, the creative exercise of novelty, flexibility, judgment and aesthetic capability in curriculum development can be an intensely humanistic enterprise -- informed by science and technology but wedded to the ideal of the fullest development of human potential and the life-long achievement of human aspirations. Creativity in human relationships and in the facilitation of group behavior is known to be very nearly the sine qua non of successful curriculum development activity. As a producer of creative materials and of creative human environments for task accomplishment, then, the curriculum change agent is both an active artist and a scientist as well, in a very real sense. No matter where this specialist is placed in the educational hierarchy, he will act as catalyst, guide, and producer, inspiring others to unveil their own capabilities and interests and to achieve together what none would be able to do separately. The curriculum change agent may not routinely think of himself as a critical process element, but in fact he must work very closely with the teaching/learning process itself as well as with the planned change of that process. It is for this reason, of course, that curriculum developers are often chosen for this specialization and for advanced training on the basis of their outstanding performance as classroom teachers.

Another concern in developed nations is how teachers, curriculum specialists and other educational personnel are to be rewarded for the extra effort that scientific thinking about curriculum requires. Where reward structures for creative teaching and creative curriculum development exist, they are often expressed in terms of peer recognition and release time rather than in terms of extra renumeration or promotions. Reward structures which include all of these possibilities or a combination of several are of course most encouraging of a developer's best efforts. Another reward is the opportunity to compare notes with specialists in other settings. The value of conference participation is well established, but opportunities for more frequent peer exchanges and interactions can also be built into the roles of teacher-practitioners and curriculum change agents, through membership in regional associations, newsletters, and other modes of regular information exchange. From the survey, it appears that release time and financial rewards are the most common form of recognition for developers in the Arab countries.

Sometimes, particularly after the experimental phase of a new curriculum implementation, a vast communication barrier seems suddenly to arise at the point of generalizing the revised curriculum to other schools and disseminating it on a larger scale. There may be a tendency of curriculum workers who have been involved in the field trials to assume that everyone else is as knowledgeable as they are and to short-cut the necessary explanations and conceptual development which goes with the demonstration of the new materials. It is easy to understand but hard to remember that in fact a whole new set of receivers and implementers has begun to try to work with the restated concepts and new instructional tools. Persons responsible for clarification in developed countries may very well make use of internal change agents to nurture the change-over process at new sites. Again the issue of information access comes to the fore. The developer needs to know who the school's opinion leaders are and then how to persuade them to accept an advocacy role on behalf of the new curriculum. Typically, however, the developer must use intermediate agents in the form of teacher supervisors and school administrators, for he cannot himself oversee the implementation of change everywhere at once. In Arab nations, it is often a subject matter specialist who receives training in the new materials and methods and then works in the schools to assist others. But the subject matter specialists are not necessarily trained in implementation procedures in the social sense. Though they may understand the changes very well themselves, this is no guarantee that they will be able to communicate the rationale and procedures effectively or to foster the enthusiasm of other teachers toward becoming fully involved and committed to the change. There may be a need to train subject matter supervisors and inspectors specifically in change *processes*, in order that they can facilitate adoption of new ideas and act as change agents on behalf of new curriculum theories and principles.

An assumption has been made for purposes of illustration that experimentation, evaluation, and revision typically precedes new curriculum dissemination on a general scale. This is a general trend in developed countries, but is not the case in many Arab nations. Some of the reasons given for this omission are the pressure of time, the over-taxing of available researchers and evaluators, and the conviction that rational changes can be made without costly experimental procedures. What may happen in the latter case is that every school in the nation which uses new and untested curriculum becomes an experimental school, but without the benefit of having a time limit set on the experiment. The detection of ineffectiveness or inappropriateness of part or all of the new curriculum will be much more difficult, and both negative and neutral effects may not surface for years. Yet it must be admitted that not all curriculum changes demand the experimental school level of attention. Initially on easily implemented changes and later on more sophisticated trials, the teacher on site can be trained to conduct very simple evaluation procedures to validate or guide revision of the new materials and methods. There are obvious implications here for improved pre-service training of teachers and for extensive in-service continuing education. But the very nations that do not have the resources or are unconvinced of the necessity for curriculum experimentation are likely to be the same nations which have inadequate resources for improvement of teacher training. The dilemma is one which it may take all of the Arab nations together to solve.

The teacher, as presently trained, may not be able to imagine himself as the ally of central curriculum development specialists and as an on site curriculum change agent and evaluator. It may be equally difficult for his supervisors and administrators to encourage him in these new roles. But if the outcome of education is change, then teachers must learn to be change managers. The classroom, texts and other materials, teacher, students, and to some extent outside environments, constitute an instructional system which is empirically never the same from one day to the next, despite well established routines and familiar lesson plans. As an instructional manager, at the micro level, the teacher needs interpersonal and instructional competence, adaptability and self-directedness -- in short, all of the assets of the curriculum specialist, on a different scale and within different environmental bounds. It is not too difficult to see why talk of upgrading of teacher training has become almost an automatic reflex which follows upon talk of curriculum change. The trend toward an expanded role for teachers is very clear in developed nations, and despite the generally low level of training which Arab teachers have received in the past, there is evidence from the questionnaire that curriculum change is demanding the upgrading of teachers in service as well as the institution of new kinds of pre-service education.

In recent months, there has been marked attention given to the concept of life-long education as an indicator both of the need to extend educational opportunities at upper and lower ends of the present span of formal educaton and of the need to engage non-public agencies and institutions in the work of education and training of a nation's citizens. For some educational thinkers in developed countries, early childhood education appears to offer the best hope of achieving basic competencies and attitudes for life-long education, and it is often felt that in the absence of adequate outside facilities for pre-school education, the home environment is the most logical place to start. Others feel that it is philosophically the most acceptable approach. But in many countries in the Arab bloc, the nation's mothers are sometimes illiterate and unschooled in even basic health measures and management of household monies and record-keeping. As a result, adult literacy programs are absorbing school resources and especially trained literacy instructors as fast as they can be developed. This may in fact be the shortest route to the achievement of three objectives at once: education of the young child in the home to cope with the modern world and to motivate his own learning, increase of educational opportunity for women, and encouragement of adult education. There is also foreseen the possibility of transferring some literacy training to non-school facilities and of utilizing some volunteer teachers, once the first precedents for quality traning and upward educational mobility have been set. The pre-school and post-school years are a fertile field for imaginative use of non-print as well as print media and for educational technology in many forms. For one thing, programs at these levels tend to be less structured and more open to change, since there is no immediate threat of termination by examination. Already, the use of audiotapes has extended language practice in some literacy programs. A recent experiment in programmed instruction in Egypt (reported in Programmed Learning and Educational Technology, England, 1978) showed that, although field trials were plagued by heavy male drop-out, significant gains were made for learners in math concepts and manipulation as a result of using the programmed materials. It was recognized, however, that the programs used were themselves insufficiently field tested and validated prior to use and that delays in the arrival of materials may have influenced high drop-out rates and limited the effectiveness of the experiment. Other recent articles have dealt with increased use of language laboratories in regular school settings and with experimentation with programming for educational television.

There has obviously been a vital interest generated from Western and other developed countries in the use of non-print media to extend personnel and initiate self-instruction, particularly in those nations in the Middle East for whom acquiring the hardware to facilitate multi-media instructional development is no problem financially. It is often reported by these well equipped nations, however, that their use is limited by the lack of training of technicians. The Arab nations may wish to consider also whether the expertise is available to integrate non-print media effectively in curriculum development programs. If the mediated instructional programs do not in fact contribute to learning along the intended dimensions, through the application of curriculum planning methodologies and knowledge of different media characteristics in behavioral terms, their efficiency must be called in question. There are, of course, other criteria for usefulness than "efficiency". It may be helpful to explore what these criteria may be in the context of instructional development and significant curriculum change.

It has been suggested that one of the ways in which the use of educational media can extend the educational experiences provided in standard curricula is to improve the student's knowledge of his own immediate environment, his regional environment, and his membership in the world community. One of the most severe problems to overcome in the systematic use of media for educational purposes is the isolation of rural and desert populations from media sources and presentations. The persons who are concerned with curriculum development on a national scale are very much aware that educational television and even radio will not reach everyone. Curriculum developers from industrial countries who have had experience in educating isolated citizens may have useful ideas to share with others who are facing this problem. Some may feel that the usefulness and versatility of print media has not been exhausted and that creative applications have the potential for accomplishing more, more quickly, than other less accessible media. Some light on these issues may be overdue in conference settings which are dealing with curriculum change and process in all its forms and implications. One of the first questions, which might conceivably be asked is: what constitutes creative use of print media? Some nations are attempting to improve textbook illustrations, or to include them for the first time, and this is at least a rudimentary combination of two types of media. Other combinations may be suggested to the curriculum development specialist who is genuinely looking for new ideas.

The trends in curriculum development in the technologically advanced countries include ideas expressed above about (1) use of a number of different methodologies, (2) creation of reward structures for development activity, (3) frequent exchange of experiences through workshops and conferences, (4) greater participation of teachers and provision of specialized training in instructional design, (5) use of teachers and their supervisors as stronger elements in the dynamic communication process which ideally surrounds curriculum change activity, (6) and giving greater attention to research and evaluation processes -- particularly to formative types of evaluation. Trends toward providing curriculum for early childhood education and for adult learners in a variety of subject fields challenge the curriculum developer to learn new skills and transfer what he already knows to new areas of concern. In many newer fields of learning, no curriculum presently exists and it must be designed in cooperation with people interested or working in the field. Media presentations are being used for affective purposes as well as for concept reinforcement. Programmed learning is a vital part of training for industrial or service-providing personnel. Special kinds of educational programs are being developed for people who live at long distances from population centers. Conducting conceptual analysis and following research reports on each of these new trends may provide useful insights to curriculum developers in the Arab world. Such comparative studies may lead to adaptations and solutions which are particularly appropriate to Arab cultural perspectives and values.

Other issues are emerging in developed nations, not all of which have been adequately resolved. In some cases, technologies exist which are not being used. There are technologies of human communication, interpersonal relations, organizational and staff development, functional job analysis, role-modeling, games and simulations, and wholly new techniques of observation and evaluation which are available for use in the curriculum development process. Some countries identify strongly with the need for "hard" science technologies; others are convinced that the "soft" science technologies have greater potential for changing educational experiences. Most educational planners are using some combination of both. It would be highly advantageous to Arab curriculum change specialists to acquire both kinds of techniques, to expand their behavioral repertoires and to respond more effectively to a variety of interpersonal and technological situations.

It is a question whether curriculum innovations which affect roles and role relationships can be "disseminated" and implemented in the customary ways -- through publication and through content-oriented inservice training. Classroom practice, the relationships between students and teachers, the relationships between professionals, and the way decisions are made and acted upon in the schools have not changed dramatically, in spite of good intentions to change. Traditionally this question has been looked upon as a technical problem. With more resources, more information, better use of mass media, it was assumed that developments would be disseminated and implemented. But such as assumption basically ignores the fact that teachers and students, as well as parents and other members of the lay community, have their own values, attitudes and understandings concerning the patterns of authority and the use of curriculum innovations. These must not only be taken into account, but actively encountered, altered if possible and advisable, or incorporated in curriculum revisions which may be more acceptable to them. In other words, curriculum change is most properly an internal negotiating process, once broad goals and perspectives are established by external authority or by a combination of external and internal forces. Role differentiations are normally an underlying agenda in all such negotiations.

Even changes in educational structure are never really "implemented" if they are not followed by an "internal development process" that affects the decision-making structures and role relationships. Any country with a centralistic machinery which has successfully implemented new educational structures can quite easily fall into the mistake of continuing an old centralistic political-administrative strategy for the implementation of curriculum innovations, administrative and organizational development and role relationships which are qualitatively different, and which probably can be implemented only through other strategies.

"Piecemeal" evaluation and research, or research in response to crisis obviously does not provide the broad base of data and interpretive information which educators need to plan innovations which are scientific, culturally and socially acceptable, and personally satisfying to the persons influenced by these changes. But funding for systematic, broadly based and integrated research is very costly and school personnel trained to carry out such research simply do not exist in most countries. The challenge is to discover ways to "do more with less," and cooperative efforts may accomplish this.

Comprehensive systems planning, at its best, provides for the dynamic, continuous interaction of all components of the educational system -- including all levels, all linkage mechanisms, all personnel, and all curriculum development activities. Changes are perceived in interactive systems to be mutually arrived at, rather than imposed by one level upon another.

The conclusion of this analysis is that widespread linkage mechanisms are probably the most important development to have occurred recently in curriculum change and development work. Among the Arab nations, educational linkage functions are often performed by UNESCO or ALESCO. However, the matter of curriculum development is so highly specialized and of such critical importance that a special network for information exchange and strategy discussions seems indicated. Such a curriculum development planning network could either function independently or be a subsystem of an educational innovation network. It is a hypothesis, supported by this research, that shared planning, shared decision-making, and shared knowledge of results offer the best hope for progress in Arab education. These are the critical elements of the curriculum development and change process, and they deserve the fullest attention from all concerned educators in the Arab world.

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APPENDIX 1

QUESTIONNAIRE CONCERNING THE DEVELOPMENT OF CURRICULUM IN THE ARAB COUNTRIES

I. Administrative Infrastructure of the Curriculum Development Machinery for Each Educational System

(This question is especially aimed toward identifying and describing the units and subunits within each Ministry of Education which have specific internal responsibility for curriculum development activities, in addition to sharing curriculum concerns and relationships with other units under Ministry control.)

A. Infrastructure of administrative units which have responsibility for curriculum development

In each country, curriculum development units or divisions may have several subunits. Please indicate with a check (✓) the kinds of subunits listed below which you have in your Ministry of Education.

1. Specialized curriculum development units on the following levels:

   ☐ a. elementary education

   ☐ b. junior high school

   ☐ c. senior high school

2. An experimental unit for initiating try-outs of newly designed curriculum:

   ☐ a. on a limited level

   ☐ b. on a regional level

   ☐ c. on a national level

3. A unit specialized in educational research and development (R & D):

   ☐

4. A unit responsible for evaluating existing curriculum and suggesting or recommending changes or further development:

   ☐

5. A control or supervisory unit for monitoring the progress of proposed curriculum revisions:

   ☐

6. A publications unit which attends to the preparation of manuals, textbooks, etc.:

   ☐

7. An audio-visual or instructional media unit which is solely designed to assist in the curriculum development process:

   [ ]

8. A unit responsible for training teachers to use the newly developed curriculum:

   [ ]

B. The external relationships of the primary curriculum units or divisions.

The curriculum divisions or components within each country may interact with other units in the Ministry of Education in a variety of ways. Listed below are several of the typical units to which a curriculum development unit might relate. Please check (✓) the units which you think are linked with the curriculum development unit and describe briefly the nature of the interaction between them.

Ministry of Education Units or Divisions	Brief Description of Relationship of Each Unit to the Ministry's Curriculum Development Unit
[ ] 1. Educational Planning	
[ ] 2. Educational Research	
[ ] 3. Educational Statistics	
[ ] 4. Training	
[ ] 5. College of Education & Teacher Training Institutes	
[ ] 6. Examinations	

C. Composition (sub-units) of the primary curriculum development unit or division

The exact composition of the Ministry's curriculum development unit or division varies from country to country. Please check (✓) the categories of curriculum development personnel which are appropriate for your country, indicate the number of persons working in each category, and indicate the highest degree which each has earned.

Categories	No. of Persons in each Category	Highest Degrees Earned
☐ 1. Director		
2. Special curriculum development subunits for the following:		
☐ a. Arabic language		
☐ b. Foreign languages		
☐ c. Science		
☐ d. Social Studies		
☐ e. Publications		
☐ f. Instructional media (audio-visual)		
☐ g. Mathematics		
☐ h. Other (please list other specicializations below)		
________________		
________________		
________________		

D. Information network

Curriculum development divisions depend heavily on the information networks which they use to carry on their activities. From the list below, please select the information network components which you have in your country and mark them with a check (✓).

☐ 1. Information components necessary for curriculum development

☐ 2. Information units about students, their numbers, their academic progress and their grade levels

☐ 3. Information units about teachers, their numbers, their degrees and their academic productivity

☐ 4. Information component which provides access to research results which are relevant for curriculum planning

☐ 5. Information component which makes available the news of innovations in other countries concerning curriculum in general and in specific subject areas.

E. Technical Assistance Machinery

Central curriculum development divisions or units often make use of a variety of technical assistance subunits or associated agencies. Please check (✓) the technical assistance units or components which are available in your country.

☐ 1. A component for science curriculum development

☐ 2. A component for publications

☐ 3. A component for instructional media

☐ 4. A component for research in curriculum

☐ 5. A component for analysis of information in curriculum

F. Do you have adequate special physical facilities (buildings and/or equipment)? Please check (✓) the appropriate answer.

☐ Yes ☐ No

G. Do you have a special budget for curriculum activities? Please check (✓) the appropriate answer.

☐ Yes ☐ No

II. Factors Which Influence Curriculum Change and Development

Any change or development in curriculum is usually produced as a response to many significant factors--social, economic, or educational. Please check (✓) each of the factors which you find are most influential on curriculum change or development in your country:

☐ 1. New educational policies or strategies

☐ 2. Changes in the educational structure

☐ 3. Dissatisfaction of the persons responsible for curriculum

☐ 4. Dissatisfaction of parents

☐ 5. Dissatisfaction of students

[ ] 6. Results of research studies in curriculum and education

[ ] 7. Scientific and technological progress

[ ] 8. Social change

[ ] 9. High level of wastage (student failures or grades repeated)

[ ] 10. Need for certain kinds of manpower

[ ] 11. Other (Please specify.) ______________________

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III. Initiation of Curriculum Change and Development

A. What are the agencies which initiate change and curriculum development in your country?

Please check (✓) the appropriate answers:

[ ] 1. Central educational planning division

[ ] 2. Regional educational units (institutions, schools, etc.)

[ ] 3. School principals and their associates

[ ] 4. Specialized teachers

[ ] 5. Curriculum specialists

[ ] 6. College of education and teacher training faculty

[ ] 7. Mass communication

B. How is curriculum change initiated in your country? Please indicate with a check (✓):

[ ] 1. From the "top down", with top administrators mandating change and directing the efforts of subordinate staff

[ ] 2. From the "grass roots", with change initiated and implemented in individual schools at the local level

[ ] 3. By "demonstration", the introduction of innovative projects in one school or a limited number of schools

[ ] 4. Combination of the above

[ ] 5. Other (Please specify.) ______________________________

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C. In your opinion what are the most important problems affecting the process of change and development of curriculum in your country?

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IV. Planning for Change and Development in Curriculum

A. How often does curriculum change occur in your country? Please check (✓) the answer which is most applicable:

[ ] 1. Every year

[ ] 2. Every five years

[ ] 3. Whenever there are definite problems or discrepancies in the educational process

[ ] 4. When the responsible person on the Ministry level mandates it

[ ] 5. Whenever the people who are concerned about educational processes in the schools and classrooms see the need for change

B. Describe the usual planning process involved in change and curriculum development in your country.

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C. Which agencies or individuals are responsible for planning for change and development of curriculum? Please check (✓) the appropriate answer or answers:

[ ] 1. Head of a planning division within the Ministry of Education.

☐ 2. Curriculum specialists
☐ 3. Principals
☐ 4. Specialists in educational evaluation
☐ 5. Specialists in educational research
☐ 6. Specialists in different subject matter
☐ 7. Agencies
☐ 8. Other (Please specify.)

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D. Indicate the types of organizations which are involved in the process of planning for curriculum change (e.g. committees).

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E. Do you make use of financial estimation in the process of planning curriculum change?

☐ Yes

☐ No

V. Design and Revision

A. The process of curriculum design and revision consists of many interrelated educational planning activities. Please check (✓) the activities which are carried on in your country in connection with curriculum change:

☐ 1. Stating the strategy and rationale for such change
☐ 2. Stating the objectives of the new curriculum on the following levels:
  ☐ a. General objectives
  ☐ b. Specific objectives
  ☐ c. Performance objectives

☐ 3. Task analysis for the content of the new curriculum

☐ 4. Consideration of learning theories which may be facilitative of the success of the new curriculum

☐ 5. Establishing criteria for evaluation

☐ 6. Determining content for texts; teacher and student manuals

☐ 7. Design of media to facilitate understanding of the new curriculum

☐ 8. Other (Please specify.) ____________________

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B. What are the supportive activities undertaken in your country to assist in the implementation of new curriculum? Please check (✓) the answers which apply:

☐ 1. Textbook development consistent with new curriculum

☐ 2. Development of teachers' manuals

☐ 3. Development of students' manuals

☐ 4. Production of media resources

☐ 5. Other supportive means or activities (Please specify.)

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C. Describe the process used for developing and publishing or producing new textbooks to accompany curriculum change.

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D. What is the process used for producing other media resources to be used with the new curriculum?

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VI. Experimentation for Change in Curriculum Development

A. In the design and implementation of new curriculum in your country, does the planning agency or curriculum development unit conduct experimentation before generalizing the new curriculum nationwide?

☐ Yes
☐ No

B. Describe the steps which are taken in new curriculum experimentation, if any.

C. Do you have a timetable for experimentation before generalization?

☐ Yes
☐ No

If you answered "yes", what is the length of the time period involved?

D. Does the experimental design include a pilot study?

☐ Yes
☐ No

E. What are the major steps taken in experimenting with a large sample?

F. How do you record the results of experimentation?

G. Discuss the steps which are taken to utilize the results of the experimental work prior to wider dissemination of the new curriculum.

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VII. Implementation and Dissemination of Curriculum Change and Development

A. Sometimes, when dissemination of a newly developed curriculum begins, important new concepts and methods are not very clear. Please check (✓) the agencies or groups which you think are responsible for clarification of these concepts and methodologies:

☐ 1. Ministry of Education (central office)
☐ 2. Principals
☐ 3. Specialized teachers
☐ 4. Researchers
☐ 5. Media specialists
☐ 6. Curriculum specialists
☐ 7. Public relations personnel

B. Please indicate with a check (✓) the steps which are usually included during the process of generalizing a new curriculum in your country:

☐ 1. Units are established to supervise continuing implementation of the new curriculum after its initial introduction.

☐ 2. Reports are written and statistics are collected concerning the new curriculum change.

☐ 3. Persons responsible for implementing the new curriculum meet periodically to discuss all phases of the process, including orientation and introduction, identification of problems as they arise, and resolution of these problems.

☐ 4. Site visits to schools which have successfully implemented that new curriculum are organized and encouraged.

☐ 5. Comments and complaints of students and parents are listened to and provide a basis for improving the implementation process.

C. Please check (✓) the activities which involve cooperation between your country and other countries in the region (if any):

☐ 1. Conferences for research and curriculum development
☐ 2. Site visits by curriculum or media specialists to study the curriculum development process in other countries
☐ 3. Exchange of teachers
☐ 4. Exchange of students
☐ 5. Exchange of textbooks
☐ 6. Utilization of consultants from other countries
☐ 7. Cooperative projects in research and model-building in curriculum theory
☐ 8. Giving study leave for curriculum specialists for comparative study in other countries
☐ 9. Participation in conferences and meetings organized by ALESCO.
☐ 10. Participation in international conferences and meetings (e.g., UNESCO)

D. There are several steps which may be taken as precautionary measures prior to implementation of a new curriculum. Please check (✓) the steps which regularly occur in your country:

☐ 1. Orientation of teachers and principals in schools where the newly developed curriculum will be implemented, to insure their understanding of what is planned.
☐ 2. Training of teachers in the utilization of all dimensions of the new curriculum
☐ 3. Production of a textbook that is designed to facilitate understanding of the methods and content of the new curriculum
☐ 4. Production of other instructional media for use with the new curriculum

VIII. Evaluation

A. Educational evaluation procedures are often inadequate because they are not carefully planned in advance or because there has been a lack of training for the persons asked to do the evaluating. Please indicate (✓) the factors which you think are most influential in determining the adequacy of curriculum evaluative procedures in your country:

☐ 1. Decisions of educational policy makers

☐ 2. The general direction and philosophy of curriculum development with the country

☐ 3. The certification and employment of curriculum specialists in evaluation

B. How does the process of evaluation in curriculum development occur?

C. How are the results of the evaluation of new curriculum profitably utilized?

D. Do you use the results of curriculum evaluation to change or develop the curriculum on a continuing basis?

E. Do you use a feedback system in curriculum development? How?

F. What are the problems encountered in evaluation of the process of curriculum development?

IX. Major Issues in the Process of Curriculum Development

A. The role of research

1. Do you have research machinery which serves the major administrative unit or units responsible for curriculum development?

   ☐ Yes

   ☐ No

2. To what extent does your country utilize educational research in curriculum development? Please check (✓) the answer or answers which apply:

   ☐ a. Research is a recognized part of the process of change and curriculum development.

   ☐ b. Research is viewed as a supportive effort made by planning and finance agencies within the Ministry of Education.

   ☐ c. Research is the responsibility of well-trained planners who can use research and evaluation techniques on a large scale.

3. On the basis of 100 percentage points, please indicate what portion of educational research you think should go to the following curriculum development areas:

   ________% New content
   ________% New methods
   ________% New materials
   ________% New designs for school facilities
   ________% School services
   ________% New models for curriculum development
   ________% Other (Please specify.) ____________________

   ____

4. What changes in existing research methods would you like to see made in order to improve the curriculum development process?

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   ____
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5. What are the problems which need to be overcome in curriculum development research?

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B. Participation in curriculum development

In the following table, please assign a rank from high to low, indicating the relative importance of each group as participants in the curriculum planning process. Indicate the level at which each group actually participates and the kind of participation involved.

	Rank	Level of Participation	Kind of Participation
1. Central (national) agency concerned with curriculum development			
2. Regional agencies			
3. Principals			
4. Specialized teachers			
5. Parents as citizens			
6. Students			
7. Curriculum planners			
8. University and institute professors			
9. Others (please specify ____________ ____________			

C. Decision-Making

1. The following have been identified as possible loci or "arenas" for curriculum change efforts. Please check (✓) the frequency with which each of the following locations are utilized in curriculum development in your country:

	Never	Sometimes	Often	Very Often
a. single classroom				
b. single school				
c. regional agencies				
d. central (national) agency				
e. research centers				
f. curriculum centers				

2. Please indicate with a check (✓) the groups or persons you think *should* participate in decision-making in the curriculum development process:

- ☐ a. Experts from the Ministry of Education (central government)
- ☐ b. Professors who are specialized (universities and institutes)
- ☐ c. School principals
- ☐ d. Classroom teachers
- ☐ e. Teachers' unions
- ☐ f. Parents as citizens
- ☐ g. Students
- ☐ h. Curriculum specialists in schools
- ☐ i. Curriculum specialists on local and regional levels.
- ☐ j. Others (Please specify.)

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3. Personnel Selection, training, and promotion:

Which of the following groups receive training in curriculum development methods *before* they actually participate in the process? Please check (✓) appropriate answers:

[ ] a. Principals of schools and local educational administrators
[ ] b. Educational planners
[ ] c. Educational designers
[ ] d. Researchers and evaluators
[ ] e. Specialized teachers
[ ] f. Media producers

4. What methods are used to train personnel for curriculum development roles? Please check (✓):

[ ] a. workshops
[ ] b. in-service education
[ ] c. life-long education
[ ] d. retraining at regular intervals (e.g. every four years)
[ ] e. site visitation

5. How do you reward the people for their participation in curriculum development projects? Please indicate (✓) answers which apply:

[ ] a. Possible promotion
[ ] b. Increase in salary
[ ] c. Extra pay during project period
[ ] d. Travel allowances for attending conferences
[ ] e. Paying expenses or tuition for training or further education related to the development project
[ ] f. Other (Please specify.)

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6. a. What are your recommendations for improving the existing situation regarding selection, training and promotion of curriculum development personnel?

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b. What do you think are the most important things necessary for the training of curriculum development personnel?

X. Financing of Curriculum Development

A. Do you have any specific budgetary allocation for the process of curriculum development?

B. How are estimates for such allocations arrived at by financial planners?

C. What is the process by which curriculum development efforts are financed in your country?

D. Out of the total budget of the Ministry of Education, what percentage (approximately) is used for curriculum change and development?

__________%

APPENDIX 2

COMPARATIVE ANALYSIS OF CURRICULUM CHANGE AND DEVELOPMENT IN THE ARAB COUNTRIES: THE PROCESS

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388